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BLISTER RUST CONTROL WORK
IN THE
EASTERN STATES

1942

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WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION
ANNUAL REPORT FOR 1942

United States Department of Agriculture
Bureau of Entomology and Plant Quarantine
Division of Plant Disease Control
Blister Rust Control
206 Federal Building
Cambridge 39, Massachusetts

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WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN STATES

ANNUAL REPORT FOR 1942

PART I

INTRODUCTION

This report summarizes and analyses blister rust control activities and accomplishments in the Northeastern States during the calendar year 1942. It also indicates accumulative results during the period 1918 to 1942, inclusive, and shows the present status of the various phases of control work.

The plan of this report varies considerably from that used during previous years. It is based on the following uniform financial and work projects:

Bureau of Entomology and Plant Quarantine

- Work Projects:
- BLR-1-1, Leadership, coordination and technical direction of white pine blister rust control in Northeastern Region.
 - BLR-3-1, Cooperative blister rust control on state and privately-owned lands in Northeastern Region.

Forest Service

- Financial Project: BLR-4, Blister rust control on National Forests.

Department of Interior

- Financial Project: BLR-5, Blister rust control on National Parks.

Economic Importance of White Pine

In the Northeastern States the white pine forests (pure stands and mixed stands containing 20-79 percent white pine) comprise approximately five and a quarter million acres. Over 99 percent of this pine is in state and private ownership, mostly farm woodlots. It is the principal forest tree over a considerable portion of the Region, and one of the chief sources of income. For example, in Maine and New Hampshire, over two-thirds of the total timber cut is white pine. According to data published by the Bureau of the Census, U. S. Department of Commerce, the amount of white pine lumber cut in these two Northeastern States during 1941 was 448,732,000 board feet, or 31.9 percent of the total for the entire country. The total 1941 cut in the eight Northeastern States amounted to 642,722,000 board feet, or 45.7 percent of the entire production of white pine lumber in the United States that year. No figures have been published on the amount of white pine cut during 1942, but it was undoubtedly more than the preceding year due to the great demand for this species for numerous uses in connection with the war effort. The heavy cutting operations since 1940 together with the tremendous loss of merchantable timber caused by the 1938 hurricane make it

particularly essential that the immature stands, which were not appreciably damaged by the 1938 storm, be given adequate protection to assure a continued future supply of eastern white pine. Sustained yield and a permanent lumber industry are not possible in the white pine sections of the Northeast without control of blister rust.

Eastern white pine is also very important from a scenic and recreational viewpoint, as it adds immeasurably to the attractiveness of the Region which is fast becoming one of the principal year-round playgrounds of America. Before the war, the value of the tourist business in New England alone was estimated at over 400 million dollars per year. In addition, white pine has a high value for watershed protection and has been planted extensively for that purpose as well as commercial reforestation.

The botanical range of eastern white pine includes the entire Northeastern Region. A considerable amount of pine has, however, been eliminated from the control area due to insufficient pine stocking, poor quality, excessive cost of control, too much infection, or because the total amount of pine in a township was not enough to justify public expenditures for control work. According to the permanent control records, there are 4,335,802 acres of white pine in the present net control area in the Northeastern States. This acreage comprises stands meeting pine stocking requirements, namely a minimum of 50 crop trees per acre at maturity. The white pine acreages by states are as follows:

<u>State</u>	<u>Acreage of White Pine in Net Control Area</u>
Maine	965,187
New Hampshire	1,408,204
Vermont	167,298
Massachusetts	647,749
Rhode Island	74,496
Connecticut	80,311
New York	839,387
New Jersey	3,771
Pennsylvania	149,399
Total	4,335,802

Blister Rust Infection on Pine

Blister rust infection has been reported on white pine throughout the region except in 18 counties in the southeastern and southwestern portions of Pennsylvania. Over extensive areas, from one to twenty percent of the pines are infected; and in numerous local pine tracts, from fifty to one hundred percent of the trees are diseased, many in a dead or dying condition. The amount of infection varies considerably in different localities and is directly influenced by such factors as the number of original infection centers caused by the planting of imported diseased pine, the distribution and amount of native pine, association of pine and Ribes, climatic conditions and the application of control measures. Pine infection is most abundant in Essex and Warren Counties in New York, the upper Connecticut River Valley region in New Hampshire and Vermont, and in the south central portion of Maine where the Ribes are generally abundant. In southern New England and in most of the southern and western portions of New York pine infection is relatively light, except in a few limited areas.

Due to fewer plantations of imported diseased stock and the localization of native white pine areas, there has been a relatively slow spread of blister rust infection in New Jersey and Pennsylvania. Blister rust was first reported on native white pines in Pennsylvania in 1927 and in New Jersey during 1934. Most of the native white pine in the latter state is located in the northwestern part, and initial protection has been extended to all the important areas. In many sections of Pennsylvania, numerous large Ribes are encountered and a rapid intensification of the disease results once it becomes established. Studies made during 1934 and 1937 in protected and unprotected areas in the various states of the region show that very few new pine infections have occurred in protected tracts, but in unprotected units the amount of pine infection has continued to increase, in some cases at an alarming rate.

Chart No. I shows the botanical range of white pine, boundary of the present net control area, and distribution of blister rust infection on native white pine in the Northeastern Region by counties.

CHART NO. I - WHITE PINE BLISTER RUST CONTROL

NORTHEASTERN REGION - 1942

LEGEND

- Control area
- White pine in control area
- White pine outside control area
- Distribution of Blister Rust on pine
- Regional Headquarters
- State offices



Status of Mapping White Pine Areas and Protection Zones

Excellent progress has been made since the advent of the Emergency Programs in 1933 in mapping the white pine areas and the blister rust protection zones. During the early years of the control program in this Region only a limited amount of this pre-eradication survey work was performed chiefly due to lack of funds and because large well-defined tracts were available which could be worked without detail maps. The blister rust control leaders' time during the fall, winter and early spring months was devoted chiefly to informational and service activities to secure local cooperation in control work during the following Ribes eradication season. Therefore, these leaders were unable to do much pine mapping. However, spot maps were prepared to show the location of the pine and the control areas were designated, usually on U.S.G.S. sheets, after the Ribes eradication work was performed. The Emergency Programs since 1933 were of great assistance in providing men to do important detail mapping. A total of 8,369,549 acres, or 65.4% of the net control area aggregating 12,802,654 acres has been mapped in detail. The following summary shows the status of the pre-eradication survey work, by states, as of December 31, 1942.

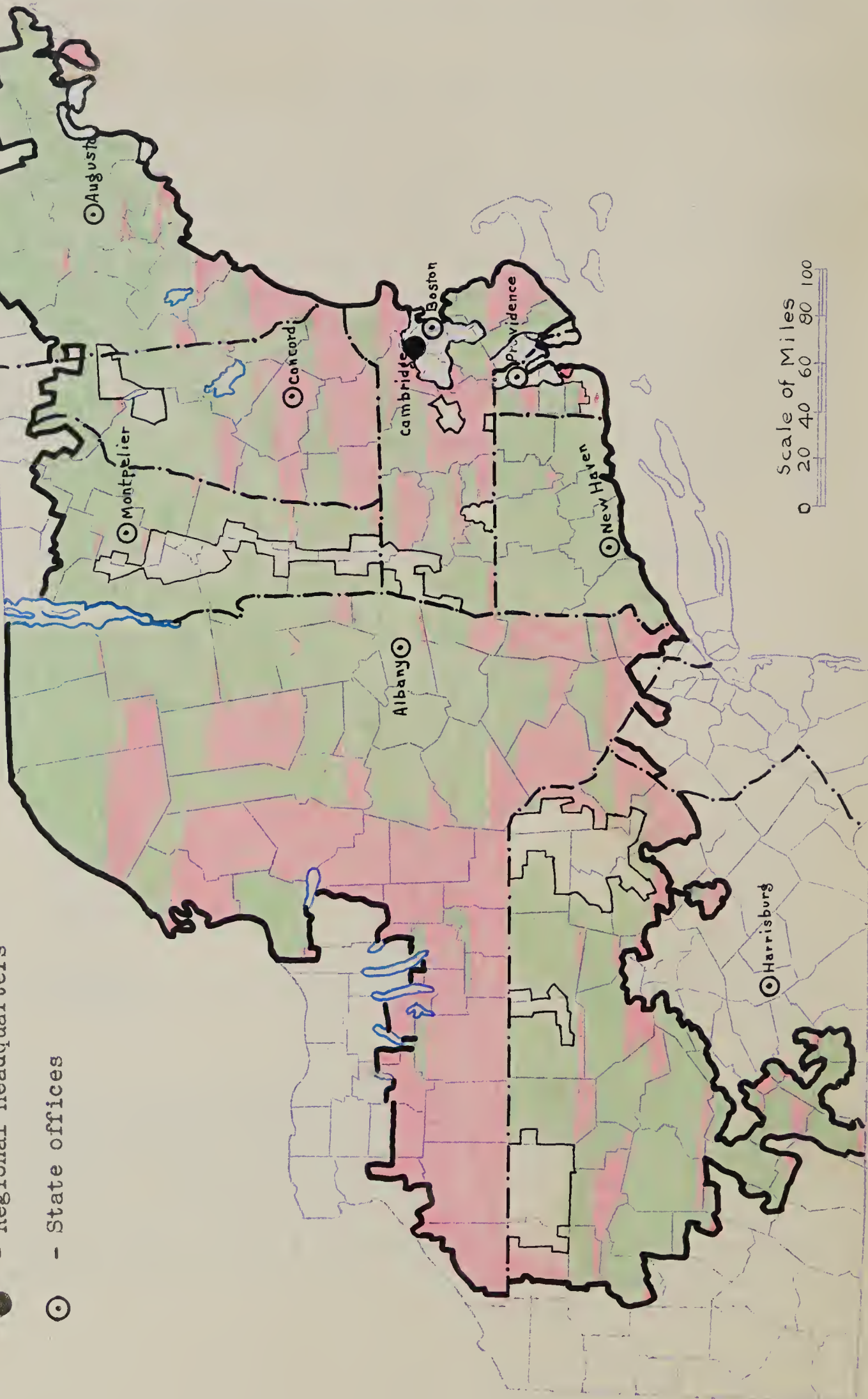
Status of Detail Mapping of Pine and Protection Zones in Control Area
(December 31, 1942)

<u>State</u>	<u>Acreage of</u> <u>Net Control Area</u>	<u>Acreage Detail</u> <u>Mapped in Net</u> <u>Control Area</u>	<u>% Net</u> <u>Control Area</u> <u>Detail Mapped</u>
Maine	2,511,408	2,099,324	83.6
New Hampshire	3,169,809	1,433,688	45.2
Vermont	810,253	788,255	97.3
Massachusetts	1,854,931	828,483	44.7
Rhode Island	184,392	122,966	66.7
Connecticut	498,476	494,476	99.2
New York	2,908,608	1,949,681	67.0
New Jersey	16,742	0	0
Pennsylvania	848,035	652,676	77.0
Total	12,802,654	8,369,549	65.4

The unmapped acreage in the net control area totals 4,433,105 acres, of which 83.9%, or 3,721,496 acres, is in the three states of New Hampshire, Massachusetts and New York. Chart No. II shows the percentage of the present net control area that has been detail mapped in each county. In addition, "spot mapping" of white pine has been performed in most sections where detail mapping has not yet been conducted. In the Pennsylvania counties shown as partly mapped, most of the pine areas have been mapped in detail, but not the protection zones.

LEGEND

- Control area - 12,802,654 acres
- Mapped - 8,369,549 "
- Unmapped - 4,433,105 "
- Regional Headquarters
- State offices



Status of Ribes Eradication Work

The present net blister rust control area in the Northeastern States comprises 12,802,654 acres, of which 10,774,351 acres, or 84.2%, has been given initial protection, and 4,010,411 acres, or 31.3%, has been reworked once. A considerable acreage has also been reworked more than once, but it will be necessary to planimeter such areas on the permanent control maps before data are available on the acreage involved. The status of the Ribes eradication work, by states, is as follows:

<u>State</u>	<u>Acreage of Net Control Area</u>	<u>Acreage Worked in Net Control Area</u>		<u>Percentage Net Control Area Worked</u>	
		<u>Initial</u>	<u>First Re-Erad.</u>	<u>Initial</u>	<u>First Re-Erad.</u>
Maine	2,511,408	2,131,081	733,774	84.9	29.2
New Hampshire	3,169,809	2,877,564	826,550	90.8	26.1
Vermont	810,253	439,287	136,604	54.2	16.9
Massachusetts	1,854,931	1,821,568	570,590	98.2	46.9
Rhode Island	184,392	183,289	152,487	99.4	82.7
Connecticut	498,476	494,476	321,859	99.2	64.6
New York	2,903,608	2,271,311	849,062	78.1	29.2
New Jersey	16,742	16,742	1,417	100.0	8.5
Pennsylvania	848,035	539,033	118,068	63.6	13.9
Totals	12,802,654	10,774,351	4,010,411	84.2	31.3

The preceding summary was compiled from the permanent control records submitted to the Cambridge Office by the respective blister rust control leaders. In computing the acreages worked in the net control area, many tracts which had been previously examined for Ribes were discontinued from the control area for various reasons, such as: pine no longer exists due to fire, hurricane, logging, etc.; pine did not meet minimum stocking requirements; areas of poor quality pine; mature pine areas where no further control work needed and reduction in width of protection zones. Consequently, the acreages worked in the net control area are considerably less than the gross acreages worked, as compiled from the annual statistical reports submitted by the state leaders.

The status of Ribes eradication work is shown in Chart No. III on the basis of the percentage of the present net control area that has been worked in each county in the respective Northeastern States.

LEGEND

Control area - 12,802,654 acres

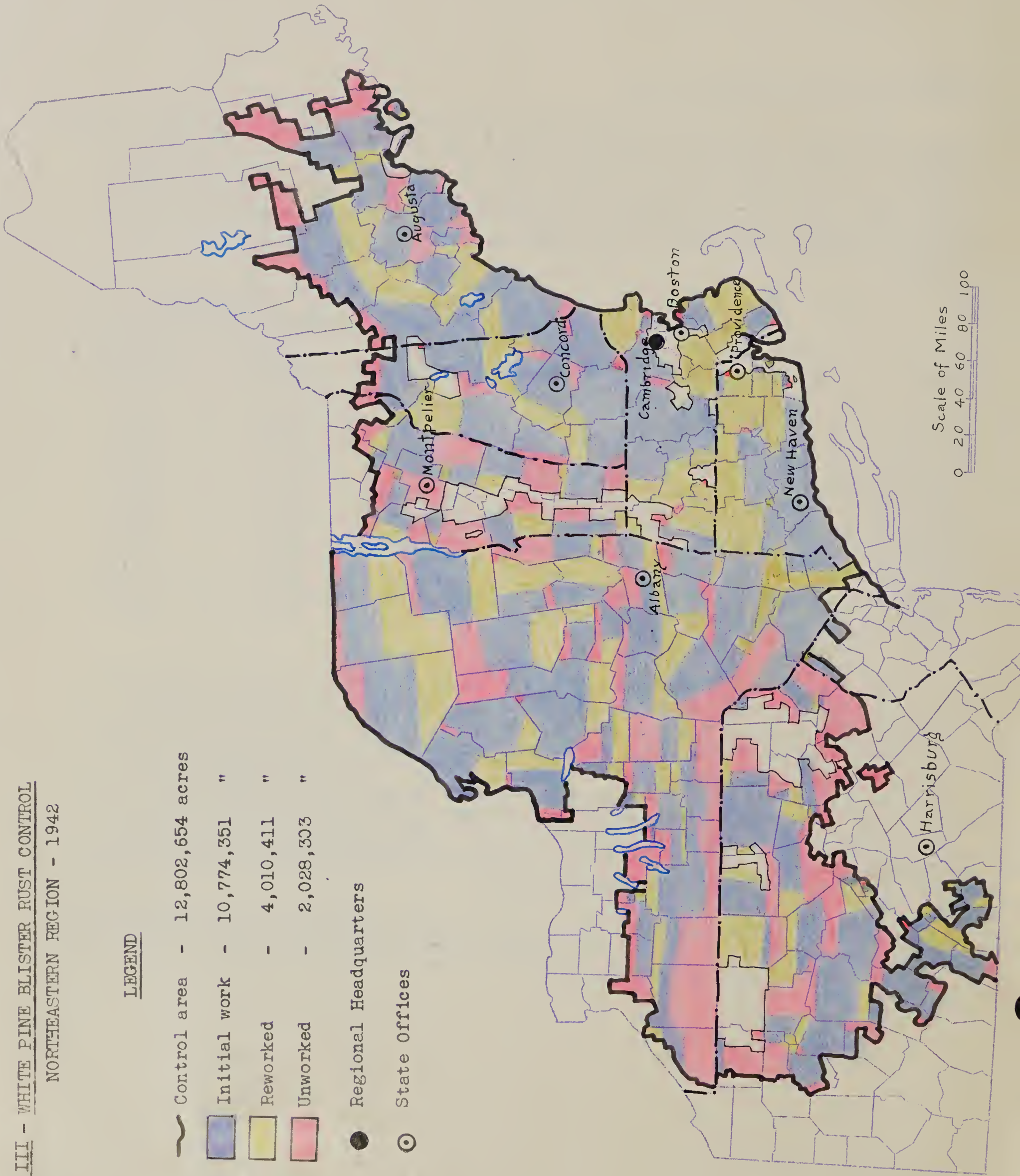
Initial work - 10,774,351 "

Reworked - 4,010,411 "

Unworked - 2,028,303 "

Regional Headquarters

State Offices



Portion of Net Control Area on Maintenance Basis

In preparing the permanent control records and maps, the district leaders were instructed to place any areas on a maintenance basis if the Ribes in these tracts were so scarce that danger from blister rust is negligible for an indefinite period. To assure the continuation of this safe condition requires periodic examinations and in some instances Ribes eradication by scouting methods. As of December 31, 1942, a total of 2,247,065 acres, or 17.5% of the net control area in the Region, was classified as being on maintenance. This represents an increase of over a half million acres as compared with the maintenance acreage reported at the end of 1941. The following tabulation gives detailed information on maintenance acreages in the net control area, by states, while Chart No. IV shows the percentage of the net control in each county that is now on maintenance. Considerable additional acreage can doubtless be placed on maintenance, but field examinations will first be necessary to determine existing conditions.

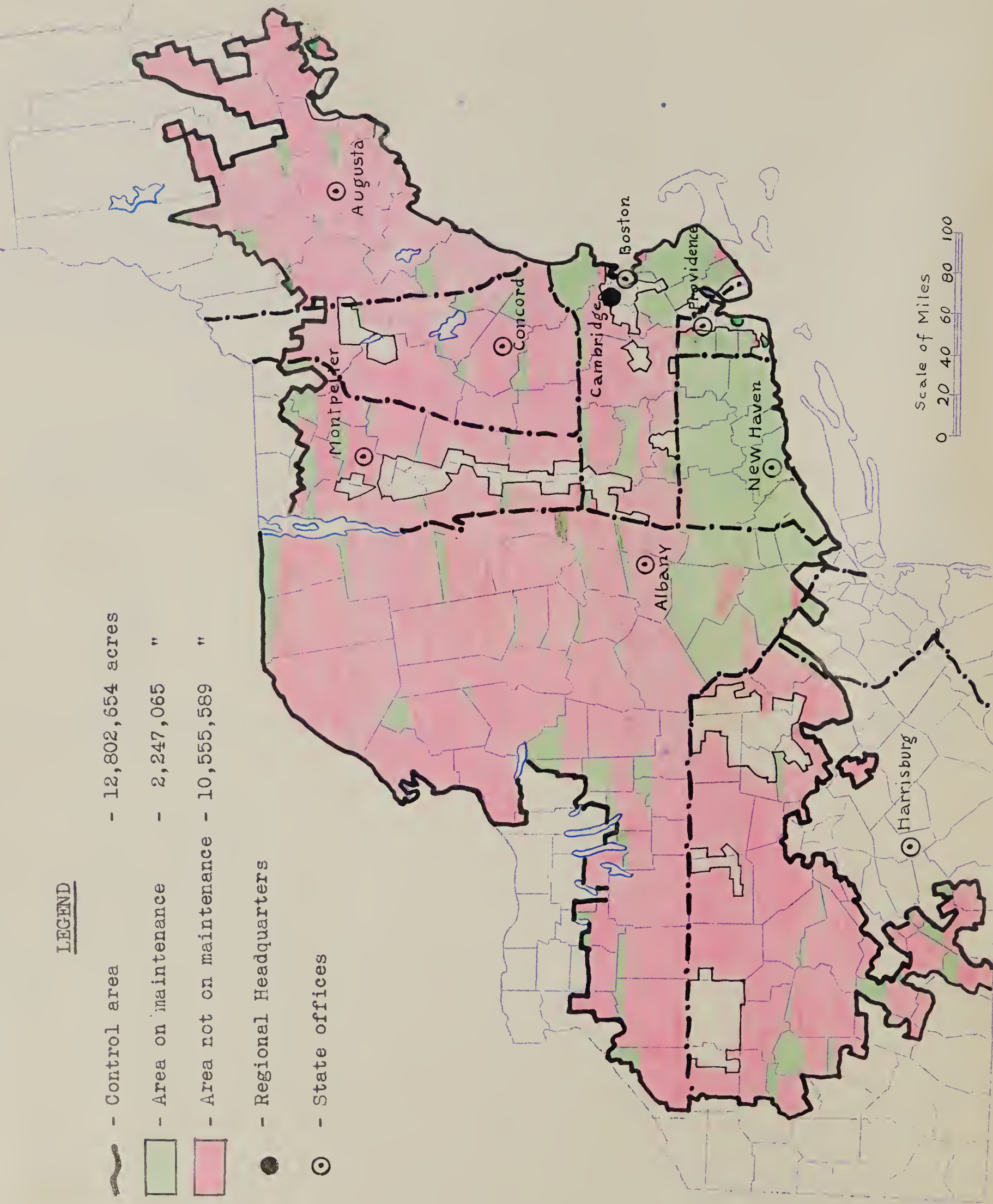
Acreage on Maintenance Basis - December 31, 1942

<u>State</u>	<u>Acreage of Net Control Area</u>	<u>Acreage Reported on Maintenance Basis</u>	<u>Percentage of Net Control Area on Maintenance Basis</u>
Maine	2,511,408	117,933	4.7
New Hampshire	3,169,809	246,970	7.8
Vermont	810,253	59,603	7.4
Massachusetts	1,854,931	734,009	39.6
Rhode Island	184,392	183,289	99.4
Connecticut	496,476	481,029	96.5
New York	2,908,608	359,551	12.4
New Jersey	16,742	16,742	100.0
Pennsylvania	848,035	47,883	5.6
Totals	12,802,654	2,247,065	17.5

CHART NO. IV - WHITE PINE BLISTER RUST CONTROL
NORTHEASTERN REGION - 1942

LEGEND

- Control area - 12,802,654 acres
- Area on maintenance - 2,247,065 "
- Area not on maintenance - 10,555,589 "
- Regional Headquarters
- State offices



PART II

LEADERSHIP, COORDINATION AND TECHNICAL DIRECTION OF WHITE PINE
BLISTER RUST CONTROL IN NORTHEASTERN REGION - WORK PROJECT ELB-1-1.

Under Work Project ELB-1-1, the Bureau of Entomology and Plant Quarantine is responsible for the leadership, coordination and technical direction of all blister rust control activities in the Northeastern Region, comprising New York, New Jersey, Pennsylvania and the six New England States. However, no control work has been performed in New Jersey since 1937 as all important white pine areas in that state have been given protection and are now on a maintenance basis. Control activities in each of the other Northeastern States are conducted under a memorandum of understanding between the Bureau of Entomology and Plant Quarantine and the authorized state regulatory agency - usually the state forestry department. Under each of these agreements, the Bureau of Entomology and Plant Quarantine furnishes the services of a state blister rust control leader and such district leaders as may be agreed upon from time to time in accordance with the needs of the work and the availability of funds. The state leaders are responsible for the cooperative blister rust control program and operations in their respective states, and give direct supervision to the district leaders who are responsible for all control activities in districts usually comprising several counties. The Bureau also provides these leaders and other cooperative employees with subject matter and technical information essential to the proper conduct of their work in controlling and preventing the spread of blister rust, and is responsible for the enforcement of Federal regulations on the interstate movement of blister rust host plants. The cooperating states furnish the services of a responsible state employee (usually state forester or forest commissioner) whose duties shall include nominal charge of the cooperative program and direction of the cooperative personnel in all matters concerned with carrying out any State laws and State policies with respect to blister rust control. The states also cooperate with counties, towns, associations and individuals in the local eradication of Ribes; furnish the necessary office space and facilities for the direction of the cooperative work at State headquarters; and undertake directly or in cooperation with the State agencies as may have jurisdiction, such enforcement of State laws as may be necessary for the effective prosecution of blister rust control work, including regulation of the intrastate movement of blister rust host plants.

Under the memorandum of understanding in New Hampshire, the district blister rust control leaders also act as district forest fire wardens, and the cost of their time (approximately one-fourth) while on such special duties is paid from state money other than that allotted for blister rust control. The agreement in Vermont also permits the district blister rust control leaders to spend one-quarter of their total time on information and service work in connection with fire control and other general forestry activities, their time

on such work being in approximate proportion to the amount of funds contributed for the leaders' salaries and expenses by the Vermont Forest Service.

The blister rust control responsibilities of the Bureau of Entomology and Plant Quarantine are administered in the Northeastern States by the Regional Blister Rust Control Office located at Cambridge, Mass. This office provides the over-all planning and coordinates into a uniform program the different phases of the work performed in cooperation with states, federal and private agencies; budgets federal funds for field work; inspects field activities to make sure effective results are accomplished; conducts special field studies and furnishes technical information to the blister rust control leaders; summarizes and analyzes records of accomplishments; makes purchases of supplies, materials and equipment; and prepares all payrolls, accounts, special records and reports.

The permanent personnel of the Division of Plant Disease Control, Bureau of Entomology and Plant Quarantine, in the Northeastern States during 1942 consisted of six regional office employees, seven state leaders, and 27 district leaders. In New York, the state blister rust control leader is an employee of the State Conservation Department under Federal appointment as a collaborator. The following summary gives detailed information concerning the permanent Federal personnel employed on blister rust control work in each of the Northeastern States during 1942.

Permanent Personnel of The Division of Plant Disease Control
in The Northeastern States During Calendar Year 1942

Regional Office - Cambridge, Mass.

E. C. Fuller, Senior Pathologist - Regional Leader
K. K. Stinson, Associate Plant Pathological Inspector - Assistant Regional Leader
P. L. Rueden, Agent - Control Specialist in Charge of Field Investigations
D. B. Cheyne, Administrative Assistant
C. A. Purcell, Clerk-Stenographer
Joseph Tierney, Clerk

Maine

State Leader

W. O. Frost, Associate Pathologist - Augusta, Maine

District Leaders

H. G. Bradbury, Chief Scientific Aid - Belfast, Maine
*M. G. Calderara, Agent - Auburn, Maine
D. S. Curtis, Chief Scientific Aid - Bridgton, Maine
J. M. White, Chief Scientific Aid - Waterville, Maine
*Replaced G. H. Kimball (deceased) in May, 1942.

New Hampshire

State Leader

L. E. Newman, Agent - Concord, N. H.

District Leaders

F. J. Baker, Chief Scientific Aid - Keene, N. H.

S. H. Boomer, Assistant Pathologist - North Conway, N. H.

T. L. Kane, Chief Scientific Aid - Littleton, N. H.

T. J. King, Chief Scientific Aid - Concord, N. H.

G. F. Richardson, Assistant Plant Pathological Inspector - Lebanon, N. H.

Clerk (71.5% state 28.5% federal)

I. W. Peabody, Clerk, C.C. - Concord, N. H.

Vermont

State Leader

S. D. Conner, Associate Pathologist - Montpelier, Vt.

District Leaders

M. R. Mulholland, Agent - Rutland, Vt.

E. H. Palmer, Agent - St. Johnsbury, Vt.

F. H. Rose, Chief Scientific Aid - Bellows Falls, Vt.

Massachusetts

State Leader

C. C. Perry, Associate Pathologist - Boston, Mass.

District Leaders

E. M. Brookway, Assistant Pathologist - Wakefield, Mass.

William Clave, Chief Scientific Aid - Worcester, Mass.

G. S. Doore, Chief Scientific Aid - Shelburne Falls, Mass.

R. E. Wheeler, Assistant Plant Pathological Inspector - Springfield, Mass.

Rhode Island

State and District Leader (State and Federal Government each pay one-half of his salary)

A. C. White, Agent - Providence, R. I.

Connecticut

State Leader

J. E. Riley, Associate Pathologist - New Haven, Conn.

District Leader

Alton Miller, Agent - Canaan, Conn. (73.8% state 26.2% federal)

State Leader

W. M. Foss, Collaborator - Albany, N. Y. (paid by state)

District Leaders

P. E. Barber, Chief Scientific Aid - Saratoga Springs, N. Y.
J. W. Charlton, Assistant Pathologist - Gloversville, N. Y.
N. H. Harpp, Chief Scientific Aid - Warrensburg, N. Y.
H. W. Holcomb, Chief Scientific Aid - Malone, N. Y.
*C. B. Kresge, Assistant Pathologist - Westport, N. Y.
H. J. McCasland, Assistant Pathologist - Schoharie, N. Y.
H. G. Strait, Assistant Plant Pathological Inspector - Hyde Park, N. Y.
T. P. Woolschlager, Assistant Pathologist - Boonville, N. Y.

Pennsylvania

State Leader

R. P. Fatzinger, Associate Pathologist - Harrisburg, Penna.

District Leaders

M. J. DeBerti, Assistant Pathologist - Brookville, Penna.
**P. H. Simmonds, Assistant Pathologist - Stroudsburg, Penna.

*Headquartered at Ithaca, N. Y. prior to October, 1942.
** " " Clearfield, Penna. prior to November, 1942.

Informational and Service Activities of District Leaders

The success of the control program in the Northeastern States has been due in part to the effective informational and service activities of the blister rust control leaders in securing local cooperation in the application of control measures. Due to economic conditions and the availability of relief labor, no special efforts were made to solicit such cooperation in several states from 1933 to 1941, inclusive. Consequently, there was a general decrease in the volume of informational and service activities by the blister rust control leaders. Now that relief funds and labor are no longer available for control work and local cooperators will have to assume a larger proportion of the control costs, an increased amount of informational and service work will be necessary.

Table 1 summarizes the informational and service work performed by the blister rust control leaders during 1942, while the accomplishments for the period 1923-1942, inclusive, are shown in Table 2. On the basis of totals for all states, there were increases during 1942 as compared with the previous year in the volume of all phases of informational and service activities except "Items Published" and "Persons Instructed in The Field". However, an analysis of the 1942 accomplishments by states shows the need for increased activity in some instances. For example, the Maine district leaders' informational work consisted of only two meetings addressed and one news item published. Detailed summaries of each district leader's activities during 1942 have been furnished the respective state leaders by the Regional Office together with comments on any pertinent items brought out by an analysis of the data. During the first three months of 1943, the blister rust control leaders in Maine conducted a series of meetings while other phases of their informational and service activities during this period exceeded the results reported for the entire calendar year 1942. Undoubtedly, their increased efforts were an important factor in obtaining 53 town appropriations totalling \$10,010. for Ribes eradication work during 1943 which represents an increase of 136.2 percent in such cooperation over the preceding

Table 1 - Summary of 1942 Informational and Service Activities of District Blister Rust Control Leaders

Informational Activities

State	Meetings Addressed		Radio Talks	Displays Placed	Items Published
	Number	Attendance			
Maine	2	26	-	-	1
N. H.	100	6,384	-	82	12
Vt.	20	820	-	14	10
Mass.	10	4,913	-	12	2
R. I.	-	-	3	-	3
Conn.	13	578	-	-	4
N. Y.	59	7,869	2	50	7
Penna.	-	-	2	6	9
All States	209	20,590	7	164	48

Service Activities

State	Initial Interviews	Follow-up Calls	Persons Instructed in Field
Maine	392	177	156
N. H.	1,297	1,532	415
Vt.	684	372	121
Mass.	530	174	49
R. I.	82	60	19
Conn.	161	94	44
N. Y.	1,233	807	746
Penna.	114	31	208
All States	4,493	3,247	1,758

Table 2 - Summary of Informational and Service Activities of Permanent and Temporary District Blister Rust Control Leaders During Period 1923-1942, Inclusive

Informational Activities

State	Meetings Addressed		Displays Placed	Items Published
	Number	Attendance		
Maine	1,311	30,892	1,025	585
N. H.	3,219	181,771	2,078	4,122
Vt.	892	27,161	758	591
Mass.	977	39,572	852	2,129
R. I.	251	19,465	129	408
Conn.	96	3,211	141	645
N. Y.	1,739	132,015	780	2,565
Penna.	2	165	43	16
Totals	8,437	434,252	5,806	11,061

Service Activities

State	Initial Interviews	Follow-Up Calls	Persons Instructed in Field
Maine	30,792	10,887	21,241
N. H.	36,068	34,527	20,456
Vt.	13,887	8,915	10,100
Mass.	34,215	12,910	12,353
R. I.	3,681	3,108	708
Conn.	4,237	3,127	1,577
N. Y.	30,737	22,118	21,307
Penna.	1,294	283	1,021
Totals	154,911	95,875	88,763

The data for Pennsylvania cover the period July 1, 1935 to December 31, 1942 when from two to three district leaders have been employed.

A considerable amount of informational and service work is also performed by the state leaders and temporary state assistants, but the results of their efforts in this respect are not included in this report as these employees do not submit monthly summaries of such activities to the Cambridge Office.

SUMMARY OF CONTROL ACCOMPLISHMENTS UNDER PROJECT BLR-J-1

Ribes Eradication

The 1942 blister rust control activities in the Northeastern Region were somewhat handicapped by conditions resulting from the war emergency. There was a serious labor shortage in many localities where defense industries were located, especially along the coast, where the shipyards have taken thousands of workers, and in the vicinity of numerous industrial centers. Although adequate funds were available for control work in connection with the federal agency projects under the State W.P.A. Program, relatively few relief workers were obtainable. For example, all W.P.A. relief laborers in Maine were assigned to airport construction and other strictly war projects effective about May 1, 1942. C.C.C. and S.C.S. participation in control work during 1942 was limited to a few days' work by a crew from one camp in each of the States of Maine, Rhode Island and New York.

In spite of the 1942 labor situation, 488,614 acres were cleared of 3,189,027 wild and cultivated Ribes as a result of 52,551 man days' labor by employees assigned to projects conducted under the Regular Cooperative, C.C.C., and State W.P.A. Programs. The total acreage worked during 1942 was only 15.1% less than the preceding year when considerable assistance was available from personnel assigned to the various Emergency Programs. This relatively small decrease in acreage examined during 1942 was due to an increase of 73.1% in acreage cleared of Ribes under the Regular Cooperative Program as compared with the previous year's accomplishments. This increase was primarily due to the availability of additional Federal \$103.14 funds for control work during 1942 and the increased use of scouting methods on areas with relatively few Ribes.

Control work on National Forests and Parks was restricted to small projects at Acadia National Park in Maine and the Allegheny National Forest in Pennsylvania. The results of such 1942 activities and the status of control work on federal lands in this Region are summarized in detail under Sections IV and V of this report.

Tables 3 to 8, inclusive, summarize the results of all Ribes eradication work in the Northeastern States during 1942 and for all years, by states, programs and land ownership classes.

Table 3 - Summary of All Ribes Eradication Work Performed
in Northeastern States During 1942
By States

States	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Maine	Initial	17,690	283,772	370	1,236	.07	16.1
	Re-Erad.	35,527	263,882	180	2,419	.07	7.4
	Total	53,217	547,654	550	3,655	.07	10.3
N. H.	Initial	8,728	110,408	-	979	.11	12.6
	Re-Erad.	37,411	237,739	136	3,922	.10	6.4
	Total	46,139	348,147	136	4,901	.11	7.5
Vt.	Initial	15,019	150,540	477	1,313	.09	10.1
	Re-Erad.	8,464	46,234	-	776	.09	5.5
	Total	23,483	196,774	477	2,089	.09	8.4
Mass.	Initial	4,643	24,626	14	255	.05	5.3
	Re-Erad.	68,142	180,871	1,081	3,498	.05	2.7
	Total	72,785	205,497	1,095	3,753	.05	2.8
R. I.	Initial	3,448	1,932	-	410	.12	0.6
	Re-Erad.	1,730	954	-	195	.11	0.6
	Total	5,178	2,886	-	605	.12	0.6
Conn.	All						
	Re-Erad.	33,511	113,790	69	1,212	.04	3.4
N. Y.	Initial	83,303	830,596	1,530	5,982	.07	10.0
	Re-Erad.	151,298	640,151	388	7,714	.05	4.2
	Total	234,601	1,470,747	1,918	13,696	.06	6.3
Penna.	Initial	16,245	268,559	378	2,338	.14	16.6
	Re-Erad.	3,455	10,328	22	702	.09	3.0
	Total	19,700	278,887	400	2,640	.13	14.2
All States	Initial	149,076	1,670,433	2,769	12,513	.08	11.2
	Re-Erad.	339,538	1,493,949	1,876	20,038	.06	4.4
	Total	488,614	3,164,382	4,645	32,551	.07	6.5

Table 4 - Summary of All Ribes Eradication Work Performed
in Northeastern States During 1942

By Programs

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Regular Cooperative	Initial	107,167	1,095,347	2,092	7,153	.07	10.2
	Re-Erad.	275,059	1,217,978	755	15,703	.06	4.4
	Total	382,226	2,313,325	2,847	22,856	.06	6.1
C.C.C.	Initial	48	510	-	9	.19	10.6
	Re-Erad.	80	0	-	11	.14	-
	Total	128	510	-	20	.16	4.0
W.P.A. (State)	Initial	41,861	574,576	677	5,351	.13	13.7
	Re-Erad.	64,399	275,971	1,121	4,324	.07	4.3
	Total	106,260	850,547	1,798	9,675	.09	8.0
All Programs	Initial	149,076	1,670,433	2,769	12,513	.08	11.2
	Re-Erad.	339,538	1,493,949	1,876	20,038	.06	4.4
	Total	488,614	3,164,382	4,645	32,551	.07	6.5

Table 5 - Summary of All Ribes Eradication Work Performed
in Northeastern States During 1942

By Land Ownership Classes

State and Privately-Owned Lands	Initial	149,028	1,669,923	2,769	12,504	.08	11.2
	Re-Erad.	339,036	1,492,217	1,876	19,970	.06	4.4
	Total	488,064	3,162,140	4,645	32,474	.07	6.5
Acadia National Park	Initial	48	510	-	9	.19	10.6
	Re-Erad.	248	34	-	22	.09	0.1
	Total	296	544	-	31	.10	1.8
Allegheny Nat. Forest	All	254	1,698	-	46	.18	6.7
All Classes	Initial	149,076	1,670,433	2,769	12,513	.08	11.2
	Re-Erad.	339,538	1,493,949	1,876	20,038	.06	4.4
	Total	488,614	3,164,382	4,645	32,551	.07	6.5

**Table 6 - Results of All Ribes Eradication Work in Northeastern
States During Period 1918-1942, Inclusive
By States**

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Maine	Initial	2,351,429	45,696,546	137,562	251,778	.11	19.5
	Re-Erad.	733,774	12,129,314	14,690	133,464	.18	16.6
	Total	3,085,203	57,825,860	152,252	385,242	.12	18.0
N. H.	Initial	3,177,073	56,357,093	152,644	298,958	.09	17.8
	Re-Erad.	922,367	11,871,660	6,260	111,497	.12	12.9
	Total	4,099,440	68,228,753	158,904	410,455	.10	16.7
Vt.	Initial	491,639	11,682,561	15,663	119,176	.24	23.8
	Re-Erad.	154,713	2,755,942	2,192	43,208	.28	17.8
	Total	646,352	14,438,503	17,855	162,384	.25	22.4
Mass.	Initial	2,029,797	16,539,006	257,923	128,619	.06	8.3
	Re-Erad.	1,058,533	5,737,477	24,357	90,018	.09	5.4
	Total	3,088,330	22,276,483	282,280	218,637	.07	7.3
R. I.	Initial	329,347	255,813	13,689	21,213	.06	0.8
	Re-Erad.	311,226	365,336	10,008	53,881	.17	1.2
	Total	640,573	621,149	23,697	75,094	.12	1.0
Conn.	Initial	443,288	2,466,403	29,317	39,722	.09	5.6
	Re-Erad.	462,332	4,797,187	10,362	93,357	.20	10.4
	Total	905,620	7,263,590	39,679	133,079	.15	8.1
N. Y.	Initial	2,539,900	61,959,759	124,308	688,904	.27	24.4
	Re-Erad.	955,252	10,129,028	13,693	182,046	.19	10.6
	Total	3,495,152	72,088,787	138,001	870,950	.25	20.7
N. J.	Initial	16,742	47,780	1,713	1,324	.08	3.0
	Re-Erad.	1,417	16,956	15	392	.28	12.0
	Total	18,159	64,736	1,728	1,716	.09	3.7
Penna.	Initial	603,642	32,759,964	51,154	318,876	.53	54.4
	Re-Erad.	224,488	5,502,755	3,121	156,713	.70	24.5
	Total	828,130	38,262,719	54,275	475,589	.57	46.3
All States	Initial	11,982,857	227,764,925	783,973	1,868,570	.16	19.1
	Re-Erad.	4,824,102	53,305,655	84,698	864,576	.18	11.1
	Total	16,806,959	281,070,580	868,671	2,733,146	.16	16.8

The data for Table 6 were compiled from the state leaders' annual statistical reports and special yearly reports of any control work on National Forests and Parks. In 1937, the following adjustments were made in the acreage figures for the period 1918-1937, inclusive:

Maine - 1,017,911 acres were deducted from the total of the yearly acreages of initial work reported up to 1937, inclusive. This reduction represented eliminated area that was erroneously included in original acreage figures for years 1921-1930, inclusive, when the control work was performed on the owner-labor basis. These eliminated areas did not contain sufficient pine to justify control work.

Vermont - 13,560 acres added to initial work and deducted from rework acreage reported up to 1937, inclusive. These 13,560 acres were erroneously reported as reworked.

Connecticut - 32,197 acres added to initial work and deducted from rework acreage reported up to 1937, inclusive. These 32,197 acres were erroneously reported as reworked.

The following additional adjustment was made at the end of 1942 to make the data as compiled from the state leader's annual reports agree with the CO-105 records:

Maine - 8,768 acres deducted from initial acreage reported up to 1942, inclusive, and added to reworked acreage for all years.

Table 7 - Results of All Ribes Eradication Work in Northeastern
States During Period 1918-1942, Inclusive.
By Programs

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Regular Cooperative	Initial	8,314,437	103,635,194	610,644	665,383	.08	12.5
	Re-Erad.	1,839,776	10,525,193	25,211	116,642	.06	5.7
	Total	10,154,213	114,160,387	635,855	782,025	.08	11.3
C.C.C.	Initial	1,380,051	49,796,551	75,026	684,302	.50	36.1
	Re-Erad.	1,200,463	16,666,472	18,368	453,609	.38	13.9
	Total	2,580,514	66,463,023	93,394	1,137,911	.44	25.8
S.C.S.	Initial	20,451	651,444	360	9,944	.49	31.9
	Re-Erad.	10,120	18,830	-	2,485	.25	1.9
	Total	30,571	670,274	360	12,429	.41	21.9
W.P.A. (F.A.)	Initial	1,927,319	63,977,156	85,141	455,305	.24	33.2
	Re-Erad.	1,479,148	23,753,574	32,843	258,265	.17	16.1
	Total	3,406,467	87,730,730	117,984	713,570	.21	25.8
W.P.A. (State)	Initial	90,665	1,754,811	2,892	11,827	.13	19.4
	Re-Erad.	154,784	794,861	2,427	13,310	.09	5.2
	Total	245,449	2,549,672	5,319	25,137	.10	10.4
P.W.A.	Initial	179,970	7,639,253	7,297	33,419	.19	42.5
	Re-Erad.	162,541	1,368,399	5,379	16,156	.10	8.5
	Total	342,511	9,007,652	12,676	49,575	.14	26.3
C.W.A. and E.R.A.	Initial	20,547	174,137	1,600	4,500	.22	8.6
	Re-Erad.	7,704	158,586	306	3,270	.42	20.6
	Total	28,251	332,723	1,906	7,770	.28	11.8
A.R.A.	Initial	10,639	112,491	948	3,564	.33	10.7
	Re-Erad.	5,714	13,779	110	772	.14	2.4
	Total	16,353	126,270	1,058	4,336	.27	7.8
N.Y.A.	Initial	373	4,280	-	85	.23	11.5
	Re-Erad.	555	4,741	-	31	.06	8.5
	Total	928	9,021	-	116	.13	9.7
N.V.S.	Initial	1,416	19,608	65	241	.17	13.9
	Re-Erad.	286	1,220	54	36	.13	4.5
	Total	1,702	20,828	119	277	.16	12.3
All Programs	Initial	11,945,868	227,764,925	783,973	1,868,570	.16	19.1
	Re-Erad.	4,861,091	53,305,655	84,698	864,576	.18	11.0
	Total	16,806,959	281,070,580	868,671	2,733,146	.16	16.8

Note: Acreage of initial Ribes eradication work under Regular Cooperative Program adjusted by deducting 1,017,911 acres from total of yearly acreages reported since 1918. This reduction represents eliminated area that was erroneously included in original acreage figures for Maine during period 1921-1930, inclusive, as explained under Table 6.

In Table 7, which summarizes the eradication work by programs, it is not possible to make the other adjustments in acreages indicated for Table 6 which lists the totals by states.

Table 3 - Summary of All Ribes Eradication Work in Northeastern
States During Period 1916-1942, Inclusive
By Land Ownership Classes

Land Ownership Class		Type of Work	Total Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
				Wild	Cult.		Man Days	Ribes
State and Private Lands		Initial	11,949,031	225,284,180	783,565	1,851,338	.15	14.9
		Re-Erad.	4,804,063	52,883,593	84,698	853,489	.18	11.0
		Total	16,753,094	278,167,773	868,263	2,710,327	.16	15.7
Acadia National Park		Initial	20,716	893,647	293	11,227	.54	43.2
		Re-Erad.	9,655	35,225	-	3,584	.37	3.6
		Total	30,371	928,872	293	14,811	.40	20.6
National Forests	White Mountain	Initial	8,729	816,274	85	2,879	.33	61.5
		Re-Erad.	8,978	324,078	-	1,916	.21	25.7
		Total	17,707	1,140,352	85	4,795	.27	64.4
	Allegheny	Initial	4,381	770,324	30	2,626	.60	70.0
		Re-Erad.	1,406	62,759	-	527	.42	44.6
		Total	5,787	833,083	30	3,153	.56	70.2
	Total	Initial	13,110	1,587,098	115	5,505	.45	70.5
		Re-Erad.	10,384	386,837	-	2,543	.24	17.3
		Total	23,494	1,973,935	115	8,048	.34	44.7
	All Classes		Initial	11,982,657	227,784,925	783,973	1,853,570	.15	14.9
Re-Erad.			4,824,102	53,305,655	84,698	853,575	.18	11.0
Total			16,806,959	281,070,580	868,671	2,733,145	.16	15.7

Special Nursery Sanitation Work

Ribes eradication work was performed around 14 nurseries in Connecticut, New York and Pennsylvania during 1942, a total of 7,353 acres being cleared of 7,462 wild Ribes and 57 cultivated bushes as a result of 245 man days' labor. The results of such activities, by states and programs, are summarized in detail in Section III (Cooperative Blister Rust Control on State and Privately-Owned Lands in Northeastern States - Work Project BIR-3-1).

Special Ribes Nigrum Elimination Work

No special Ribes nigrum elimination work was conducted in the Northeastern Region during 1942. However, such black currant bushes were removed in conjunction with the regular Ribes eradication work in all states. The results of all special Ribes nigrum elimination work in the Region during the period 1918-1942, inclusive, are summarized in Section III of this report.

Treatment of Diseased White Pines

Blister rust canker elimination work during 1942 was restricted to Vermont and New York where a few W.P.A. employees were assigned to such activities and three land owners in the former state paid the entire costs of having blister rust cankers removed from the pines on their properties under the technical supervision of the local blister rust control leaders. Tables 9, 10 and 11 summarize the results of all blister rust canker elimination work in the Region during 1942 and for all years by states, programs and land ownership classes.

Table 9 -- Summary of All Blister Pine Canker Elimination

Work in Northeastern States During 1942

(All work on state and privately-owned lands)

State	Program	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
					Branch	Stem	
Vt.	Regular	755	19	81	111	2	16
	W.P.A. (State)	81,457	905	786	895	—	367
	Total	82,212	924	867	1,006	2	383
N. Y.	All W.P.A. (State)	357,132	8,854	7,471	7,970	152	1,476
All States	Regular	755	19	81	111	2	16
	W.P.A. (State)	344,643	9,539	8,257	8,861	152	1,492
	Total	345,398	9,558	8,338	8,976	154	1,508

**Table 10 - Summary of All Blister Rust Canker Elimination
Work in Northeastern States During Period 1918-1942, Inclusive
By States and Programs**

State	Program	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
					Branch	Stem	
Maine	Regular	97,748	8,267	12,804	19,512	1,923	811
	C.C.C.	58,261	2,937	8,879	27,054	2,691	2,177
	Total	156,009	11,224	21,683	46,566	4,614	2,988
N. H.	All W.P.A. (F.A.)	28,581	5,731	638	711	-	219
Vt.	Regular	19,647	1,422	1,745	2,861	225	173
	W.P.A.(F.A.)	226,489	38,342	16,838	21,030	223	2,491
	W.P.A.(State)	21,457	985	786	895	-	367
	Total	267,593	40,749	21,369	24,786	448	3,031
Mass.	W.P.A.(F.A.)	116,167	14,956	3,682	4,107	7	3,293
	C.W.A.	4,548,000	17,303	12,784	17,511	-	5,409
	Total	4,764,167	32,259	16,466	21,618	7	8,702
N. Y.	W.P.A.(F.A.)	1,577,875	149,379	190,702	233,287	1,789	12,420
	W.P.A.(State)	323,192	8,654	7,471	7,970	152	1,476
	Total	1,901,067	158,033	198,173	261,257	1,941	13,896
Penn.	C.C.C.	567,018	28,308	76,048	458,455	67	4,564
	W.P.A.(F.A.)	352,460	4,287	53,927	108,470	1,907	2,742
	Total	919,478	32,595	129,975	566,925	1,974	7,306
All States	Regular	117,395	9,689	14,549	22,373	2,148	984
	C.C.C.	625,279	31,265	84,927	485,509	2,758	6,741
	W.P.A.(F.A.)	2,301,572	212,695	267,787	387,605	3,926	21,165
	W.P.A.(State)	344,649	9,639	8,257	8,865	152	1,843
	C.W.A.	4,648,000	17,303	12,784	17,511	-	5,409
	Total	8,036,895	280,591	383,304	921,863	8,984	36,142

**Table 11 - Summary of All Blister Rust Canker Elimination Work
in Northeastern States During Period 1918-1942, Inclusive
By Land Ownership Classes**

Ownership Class	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
				Branch	Stem	
State and Private Lands	7,976,088	277,315	378,710	893,329	6,232	33,865
National Park *	60,807	3,276	9,594	28,534	2,752	2,277
Totals	8,036,895	280,591	388,304	921,863	8,984	36,142

*Acadia National Park, Maine

Mapping of White Pine Areas and Protection Zones

Control area (white pine and protection zones) mapping work conducted under the Regular Cooperative and State W.P.A. Programs during 1942 resulted in 384,896 acres being mapped in detail. In addition, 339,621 acres were definitely eliminated from control work because the white pine in these areas did not meet minimum stocking requirements, and 424 miles of control area boundary lines were painted in the field. This mapping work required 9,769 man days' labor. The results of the 1942 mapping work, by states and programs, as well as the totals for all years are summarized in Section III of this report.

Table 12 - Statement of Funds Expended During Calendar Year 1942 on Work Project BLR-1-1

State	State Funds			Federal Funds				Total State and Federal Funds
	State B. R. Approp.	Other State Approp.	Total	B.E.&P.Q. (3101.14)	State W.P.A.	N.V.S.	Total	
Maine	\$1,415.00	\$ 540.00	\$ 1,955.00	\$16,692.50	\$ 263.07	\$ -	\$ 16,955.57	\$ 18,910.57
N. H.	1,694.74	-	1,694.74	16,802.97	2,919.99	-	19,722.96	21,417.70
Vt.	-	1,170.00	1,170.00	10,711.88	447.50	-	11,159.38	12,329.38
Mass.	-	840.00	840.00	15,127.47	647.53	-	15,775.00	16,615.00
R. I.	-	949.66	949.66	1,299.96	-	-	1,299.96	2,249.62
Conn.	240.00	1,524.96	1,564.96	4,765.98	-	-	4,765.98	6,350.94
N. Y.	-	6,899.92	6,899.92	21,103.38	3,318.21	44.80	24,466.39	30,866.51
Penna.	-	613.55	613.55	10,431.48	1,650.81	-	12,082.29	12,695.84
All States	\$5,349.74	\$11,858.09	\$15,187.83	\$96,935.62	\$9,247.11	\$44.80	\$106,227.53	\$121,415.36

The W.P.A. expenditures for Project BLR-1-1 include the salary of one district leader in Pennsylvania from January 1 to April 25, 1942; expenses of district leaders in Maine, New Hampshire, Vermont, Massachusetts, New York and Pennsylvania; and wages of clerks employed at state and district leaders' offices in New Hampshire, New York and Pennsylvania.

The N.V.S. expenditure in New York was for time a few men from a conscientious objector's camp spent assisting one of the district leaders on special field studies.

The Federal 3101.14 expenditures include the entire amounts spent from such funds in the respective Northeastern States during the calendar year 1942. In addition, \$20,605.98 Project 3101.14 funds were expended for the Cambridge Regional Office. State W.P.A. funds totalling \$5,366.01 were also used for wages of clerks and expenses of the Regional Office during the calendar year 1942.

Summaries of 1942 expenditures for all blister rust control work in the Northeastern States are given in Omnibus Tables #5 - Sheet #1 and Table #5 - Sheet #2 on Pages 38 and 39 of this report. Total blister rust control expenditures in the Region during the period 1918-1942, inclusive, are summarized in Omnibus Table #6A - Sheet #1 and Table #6A - Sheet #2 on Pages 57 and 58.

Special Omnibus Tables

The results of all important phases of blister rust control activities and expenditures by the various cooperating agencies in the Northeastern Region are summarized in the following special omnibus tables. Table #1 - Sheet #1 to Table #5 - Sheet #2, inclusive, list the data for the calendar year 1942, while Table #1A - Sheet #1 to Table #6A - Sheet #2 give similar information for the period 1918-1942, inclusive.

TABLE 21
SUMMARY OF 1942 SILVER SMELTING

State	Initial Graduation Work			Subsequent Work			Totals			
	Acres Worked	Number Wild and Cult. Silver Destroyed	Number* 8-Hour Men-Days	Acres Worked	Number Wild and Cult. Silver Destroyed	Number* 8-Hour Men-Days	Acres Worked	Number Silver Destroyed Wild & Cult.	Number 8-Hour Men-Days	Number* 8-Hour Men-Days
Maine	17,690	284,142	1,236	35,527	284,062	2,419	53,217	548,204	550	3,655
New Hampshire	8,728	110,408	979	37,411	837,379	1,328	46,139	345,283	136	4,901
Vermont	15,019	151,017	1,313	8,464	46,854	778	23,483	197,251	477	2,089
Massachusetts	4,643	24,640	255	68,142	181,952	3,445	72,785	206,592	1,095	3,753
Rhode Island	3,448	1,932	410	1,730	950	199	5,178	2,886	-	605
Connecticut	-	-	-	33,511	113,659	1,712	33,511	113,659	69	1,212
New York	83,303	832,126	5,982	151,298	904,572	1,734	234,601	1,472,665	1,918	13,696
Pennsylvania	16,245	268,937	2,338	3,455	10,350	502	19,700	279,287	400	2,640
TOTAL	149,076	1,673,202	12,513	339,538	1,475,836	1,171	458,614	3,169,027	4,045	32,551

*Number 8-hour men-days = $\frac{\text{hours worked per day} \times \text{number of men}}{8}$

TABLE 51 EXHIBIT 42
SUMMARY OF 1942 FISHES RECRUITMENT

State	Eelers per Acre		Man-Days Per Acre		Number of Camps			Number of Employees*					
	Initial Eradica- tion	Reeradi- cation	Initial Eradica- tion	Reeradi- cation	C.C.E. & S.E.A.	W.P.A.	Reg.	Laborers				All Super- vision	Total Employees
Maine	16.1	7.4	.07	.07	1	-	-	5	-	76	81	5	86
New Hampshire	12.6	6.4	.11	.10	-	-	-	-	51	88	139	6	145
Vermont	10.1	5.5	.09	.09	-	-	-	-	37	20	57	4	61
Massachusetts	5.3	2.7	.05	.05	-	-	-	-	37	26	63	5	68
Rhode Island	0.6	0.6	.12	.11	1	-	-	5	8	-	13	1	14
Connecticut	-	3.4	-	.04	-	-	-	-	-	21	21	2	23
New York	10.0	4.2	.07	.05	1	-	-	3	38	151	192	19	211
Pennsylvania	16.6	3.0	.14	.09	-	-	-	-	27	25	52	4	56
TOTAL	11.2	4.4	.08	.06	3	-	-	13	198	407	618	46	664

*Enter the maximum number of persons on the pay roll at the peak of the season. If no persons employed is not desired because the large turnover in W.P.A. camps would result in an exaggerated figure.

TABLE #2 - SHEET #1

SUMMARY OF 1942 RIBES TRACUATION -
(Including all work - initial and seasonal)

State	Regular and Cooperative*			W. F. A. 1942			C. C. C. and S. O. C.		
	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number S-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number S-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number S-Hour Man-Days
Maine	53,149	547,694	3,644	-	-	-	68	510	11
New Hampshire	39,893	213,509	3,522	6,246	134,774	1,372	-	-	-
Vermont	19,247	111,090	1,112	4,236	66,161	977	-	-	-
Massachusetts	34,366	79,245	1,750	33,419	187,347	643	-	-	-
Rhode Island	1,154	65	9	3,964	2,321	317	60	-	9
Connecticut	33,511	113,859	1,212	-	-	-	-	-	-
New York	194,246	1,236,631	11,183	40,355	236,059	1,703	-	-	-
Pennsylvania	6,660	14,079	424	13,040	265,286	1,218	-	-	-
TOTALS	382,226	2,316,172	22,856	106,260	852,345	3,773	128	510	20

*This includes work of Bureau, cooperating State and private agencies, Forest Service, and other agencies, and cooperative work with regular funds.

This table recapitulates the totals on Table 1 Sheet 1.

TABLE #3 (Cont'd)

SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP

LAND OWNERSHIP	INITIAL ERADICATION			REERADICATION			TOTALS		
	Acreage Worked	Number ^a Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number 8-Hour Man-Days	Number 8-Hour Man-Days	Acreage Worked	Number ^a Ribes Destroyed	Number 8-Hour Man-Days
National forests	-	-	-	254	1,028	46	254	1,698	46
B & C Revested lands	-	-	-	-	-	-	-	-	-
Other public domain	-	-	-	-	-	-	-	-	-
National parks	48	510	9	243	34	22	296	544	31
Indian Reservations	-	-	-	-	-	-	-	-	-
SUBTOTAL FEDERAL	48	510	9	502	1,062	68	550	2,242	77
State and private	149,028	1,672,692	12,504	339,036	1,434,797	10,970	488,064	3,166,785	32,474
GRAND TOTAL	149,076	1,673,202	12,513	339,538	1,435,859	11,038	488,614	3,169,027	32,551

^aWild and cultivated Ribes.

TABLE (F) SHEET #2

SUMMARY OF RIBES ERADICATION ON NATIONAL

1948

NATIONAL PARKS (List separately)	INITIAL WORK			REERADICATION			TOTALS		
	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days
Acadia National Park, Maine	48	510	9	248	34	22	296	544	31
TOTAL	48	510	9	248	34	22	296	544	31

*Wild and cultivated Ribes

SUMMARY OF TERMS TRANSLATED ON FILE

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• Wild and cultivated Fiber

TABLE 13 SHEET 14

SUMMARY OF RIBES ERADICATION ON STATE & FEDERAL LANDS

1942

State and Private Lands (List by States)	Initial Work			Reeradication			Totals		
	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days
Maine	17,642	283,632	1,227	35,279	264,084	2,191	52,921	547,660	3,624
New Hampshire	8,728	110,408	979	37,411	237,875	3,322	46,139	348,283	4,901
Vermont	15,019	151,017	1,313	8,464	46,234	776	23,483	197,251	2,089
Massachusetts	4,643	24,640	255	68,142	161,958	1,088	72,785	206,592	3,753
Rhode Island	3,448	1,932	410	1,730	370	195	5,178	2,886	605
Connecticut	-	-	-	33,511	115,859	1,012	33,511	113,859	1,212
New York	83,303	832,126	5,982	151,298	640,577	11,724	234,601	1,472,665	13,696
Pennsylvania	16,245	268,937	2,338	3,201	8,498	258	19,446	277,589	2,594
TOTAL	149,028	1,672,692	12,504	339,036	1,494,091	20,970	488,064	3,166,785	32,474

*Wild and cultivated Ribes

TABLE #3 SHEET #5

SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS

1942

NATIONAL FORESTS (List by Forests or Regions)	Initial Work			Reeradication	
	Acreage Worked	Number ^a Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number ^a Ribes Destroyed
Allegheny National Forest, Pennsylvania	-	-	-	254	1,698
TOTAL	-	-	-	254	1,698

Totals:			
Acreage Worked	Number ^a Ribes Destroyed	Number 8-Hour Man Days	
254	1,698	46	
254	1,698	46	

^aWild and cultivated Ribes

TABLE IV. EXHIBIT II.

SUMMARY OF ALL ORNAMENT CONTROL WORK FOR 1935

State	Cultivated Black Currant Eradication				Ornament Control				Mapping Control Areas	
	Number Inspections Made	Number Locations Found	No. Black Currants Destroyed	No. S-Hr. Man-Days	No. Hrs. Worked	No. White Pines to be Destroyed	No. Acres to be Destroyed	No. S-Hr. Man-Days	No. Acres Mapped (V. P. S. F. Jones)	No. S-Hr. Man-Days
Maine	-	-	-	-	-	-	-	-	63,771	1,378
New Hampshire	-	-	-	-	-	-	-	-	59,189	2,855
Vermont	-	-	-	-	-	-	-	-	37,217	825
Massachusetts	-	-	-	-	-	-	-	-	84,124	1,838
Rhode Island	-	-	-	-	-	-	-	-	-	-
Connecticut	-	-	-	-	8	2,210,000	7.0	94	-	-
New York	-	-	-	-	4	16,091,000	8.0	90	112,797	1,717
Pennsylvania	-	-	-	-	2	6,403,000	8.0	121	27,795	1,156
TOTAL	-	-	-	-	14	24,704,000	7.0	245	384,896	9,769

TABLE 94. SUMMARY 92

SUMMARY OF ALL OTHER CONTROL WORK

State	Treatment of Infected White Pines						Checking				
	Total Number Pines Examined	Number Infected Pines Cut Down	Number Infected Pines From Which Can- kers Removed	No. Cankers Removed		Number 3-Hour Map-Days	Average Checked	Yeast		Regular	
				Branch	Stem			Acreage Checked	Number 3-Hour Map-Days	Acreage Checked	Number 3-Hour Map-Days
Maine	-	-	-	-	-	-	-	464.5	93.9	67.6	11.2
New Hampshire	-	-	-	-	-	-	-	-	-	125.1	29.9
Vermont	22,212	995	867	1,006	2	383	-	-	-	181.6	24.9
Massachusetts	-	-	-	-	-	-	-	-	-	491.8	63.9
Rhode Island	-	-	-	-	-	-	-	-	-	16.6	7.3
Connecticut	-	-	-	-	-	-	-	-	-	40.3	7.3
New York	323,192	8,654	7,471	7,970	152	1,476	-	-	-	899.4	124.1
Pennsylvania	-	-	-	-	-	-	-	-	-	93.0	15.0
TOTALS	345,404	9,649	8,338	8,976	154	1,859	-	464.5	93.9	1,915.4	283.6

TABLE 15 SUMMIT 91

SUMMARY OF EXPENDITURES

State	Total			Summary of Federal Funds								
	Federal All agencies Including State WPA Projects)	State (Including all Coop. Funds)	Grand Total	Regular Funds				Emergency Funds				
				Bureau Entomology & Plant Quarantine Leadership & Coord. (3101)	Ins. Act (3103)	Forest Service	Dept. of Interior Bureau of Land Management (3100)	Indian Lands	Total Regular Funds	State W.P.A.	C.C.C. and S.C.S.	Total Emergency Funds
Missouri	33,561.63	9,592.10	43,153.73	16,692.50	9,080.16	-	-	-	26,947.16	6,597.97	16.50	6,614.47
New Hampshire	45,847.72	11,576.81	57,424.53	16,802.97	8,449.38	-	-	-	25,252.35	20,595.37	-	20,595.37
Vermont	24,030.29	3,417.03	27,447.32	10,711.88	4,632.61	-	-	-	15,344.49	8,685.80	-	8,685.80
Massachusetts	35,905.57	7,676.51	43,582.08	(1) 15,127.47	4,603.62	-	-	-	19,731.09	(2) 16,174.48	-	16,174.48
Rhode Island	4,036.17	3,226.44	7,262.61	1,299.96	-	-	-	-	1,299.96	2,700.56	35.65	2,736.21
Connecticut	7,900.23	7,237.72	15,137.95	4,765.98	3,134.05	-	-	-	7,900.23	-	-	-
New York	70,359.48	45,043.38	115,402.86	21,103.38	26,271.71	-	-	-	47,375.09	22,902.59	(3) 81.80	22,984.39
Pennsylvania	25,587.99	2,075.71	27,663.70	10,431.48	1,119.54	230.00	-	-	11,781.02	13,806.97	-	13,806.97
TOTALS	247,229.08	90,145.70	337,374.78	96,935.62	57,291.27	230.00	-	-	155,631.39	91,463.74	133.95	91,597.69

(1) In addition, \$20,605.98 Project 3101.14 funds were expended for New England Regional Office.

(2) " " 5,366.01 State W.P.A. " " " " " "

(3) Includes \$44.80 spent for work performed by employees from Connecticut State Camp.

TABLE 45 BUREAU OF REVENUE
SUMMARY OF EXPENDITURES FOR

State	Financial Projects										
	BIB-1 - Leadership, Coordination and Technical Direction				BIB-3 - Cooperative State and Private Land		BIB-4 - Forest Service		BIB-5 National Parks	BIB-6 O and O Revested Lands	BIB-7 Indian Reservations
	Indirect Aid State*	Federal		Total	Direct Aid State	Regular	Total	Regular	Forest Service		
Maine	1,955.00	16,692.50	263.07	18,910.57	7,637.10	9,050.16	16,687.26	23,052.16	-	1191.00**	-
New Hampshire	1,694.74	16,802.97	2919.99	21,417.70	10,182.07	6,445.58	16,627.65	36,306.83	-	-	-
Vermont	1,170.00	10,711.88	447.50	12,329.38	2,247.03	4,632.51	6,879.54	19,117.94	-	-	-
Massachusetts	840.00	15,127.47	647.53	16,615.00	6,836.51	4,603.25	11,439.76	26,967.08	-	-	-
Rhode Island	949.66	1,299.96	-	2,249.62	2,276.78	-	2,276.78	9,012.39	-	-	-
Connecticut	1,564.96	4,765.98	-	6,330.94	5,672.76	3,134.29	8,807.05	8,807.01	-	-	-
New York	6,399.92	21,103.38	3363.01	30,866.31	38,643.45	26,271.72	64,915.17	64,535.55	-	-	-
Pennsylvania	613.55	10,431.48	1650.81	12,695.84	1,462.16	1,129.51	2,591.67	10,737.86	230.00	-	-
TOTALS	15,137.83	96,935.62	9291.91	121,415.36	74,957.87	57,291.27	132,249.14	214,538.42	230.00	1191.00	-

*Including all local cooperative funds
**Includes \$16.50 C.C.C. expenditure

TABLE #1A - SHEET #2

SUMMARY OF ALL RIBES ERADICATION 1918-1942 (1951)

State	Initial and Reeradication					Per Acre			
	Gross Initial and Re-worked Acreage Reported	Net Acreage Initial and Re-work	Number Ribes Destroyed		Total Ribes in Days	Ribes		Man Days	
			Wild and Cult.	Cult. only		Initial Erad.	Re- Erad.	Initial Erad.	Re- Erad.
Maine	3,085,203	2,864,855	57,978,112	152,252	335,242	19.5	16.6	.11	.13
New Hampshire	4,099,440	3,704,114	68,337,657	158,904	410,455	17.8	12.9	.09	.12
Vermont	646,352	575,891	14,456,358	17,855	162,384	23.8	17.8	.24	.28
Massachusetts	3,088,330	2,692,158	22,558,763	282,280	218,637	8.3	5.4	.06	.09
Rhode Island	640,573	335,776	644,846	23,697	75,094	0.8	1.2	.06	.17
Connecticut	905,620	816,335	7,303,269	39,679	133,979	5.6	10.4	.09	.20
New York	3,495,152	3,120,373	72,226,788	138,001	670,950	24.4	10.6	.27	.19
New Jersey	18,159	18,159	66,464	1,728	1,716	3.0	12.0	.08	.28
Pennsylvania	828,130	657,101	38,316,994	54,275	75,589	54.4	24.5	.53	.70
TOTAL	16,806,959	14,784,762	281,939,251	866,671	773,146	19.1	11.1	.16	.18

(1) Includes 49,549 acres classed as worked initially and placed on maintenance as a result of surveys.

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TABLE #34 SHEET #1

SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1940-1949
(Initial and Recrudescence)

State	Regular and Cooperative*			W.F.A. and E.R.A.		
	Acreage Worked	Number Wild and Cultivated Ribes Destroyed	Number 8-Hour Man-Days		Number Wild and Cultivated Ribes Destroyed	Number 8-Hour Man-Days
Maine	1,930,171	22,507,716	93,391	87,437	20,563,899	129,423
New Hampshire	3,355,324	43,350,825	224,609	91,300	16,104,173	115,850
Vermont	251,732	2,490,120	31,421	22,176	8,045,969	82,266
Massachusetts	2,305,347	14,327,637	104,609	21,233	5,559,267	74,520
Rhode Island	293,587	219,073	10,548	7,636	106,275	11,630
Connecticut	349,002	2,233,457	25,627	12,238	1,485,907	30,112
New York	1,537,278	25,227,191	278,666	3,071,016	24,247,147	212,765
New Jersey	-	-	-	1,042	38,397	1,343
Pennsylvania	98,125	4,567,551	17,490	24,337	14,617,268	88,961
TOTAL	10,170,566	114,923,570	786,361	3,877,197	90,768,302	746,870

*This includes work of the Bureau, cooperating state and private agencies, Bureau of Entomology and Plant Quarantine and Laborer Department work with regular funds.
This table recapitulates the totals in table #1A Sheet #2

TABLE #3A - SHEET #2

SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1950-1955 (INCLUSIVE)
(Initial and Reeradication)

State	C.C.C. and S.C.S.			P.W.A. or A.F.S.			Total Emergency Program (W.P.A. - C.C.C. - P.W.A.)		
	Acreage Worked	Number Wild & Cultivated Ribes Destroyed	Number S-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number S-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number S-Hour Man-Days
Maine	442,234	12,482,640	152,002	69,368	2,423,057	10,426	1,155,032	35,470,396	291,851
New Hampshire	122,945	7,564,723	63,561	45,871	1,367,936	6,435	744,116	25,036,832	185,846
Vermont	95,907	3,445,324	43,787	26,537	474,945	4,910	334,620	11,966,238	130,963
Massachusetts	85,989	1,669,384	33,831	97,761	1,002,475	5,677	782,983	8,231,126	114,028
Rhode Island	262,387	271,979	51,336	12,761	47,512	1,530	346,956	425,773	64,546
Connecticut	334,620	3,274,095	74,643	13,170	309,810	2,692	556,618	5,069,812	107,452
New York	816,025	21,963,164	369,659	46,833	763,266	9,460	1,907,874	46,999,597	592,284
New Jersey	381	20,099	247	12,736	7,963	126	18,159	66,464	1,716
Pennsylvania	450,597	16,535,643	361,269	17,474	2,596,530	7,869	730,005	33,749,443	458,099
TOTAL	2,611,085	67,227,051	1,150,340	342,511	9,020,388	49,575	6,636,393	167,015,681	1,946,785

TABLE #1A SHEET #1

SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP

(CONTINUED)

Land Ownership a	Acreage of White Pine in Net Control Area b	NET CONTROL AREA		Gross Number of Initial Applications c	INITIAL ERADICATION		
		Total Acreage* (Wp.-prod. zones) d	Acreage Not Yet Worked Initially e		Net Acreage Treated in Control Area f	Gross Number Wild and Cultivated Ribes Destroyed g	Gross Number 5-Hour Man-Days h
National forests	2,734	14,896	1,786	13,110	13,110	1,587,213	5,505
State & Federal lands	-	-	-	-	-	-	-
Other public domain	-	-	-	-	-	-	-
National parks	3,638	20,716	-	20,716	20,716	893,940	11,227
Indian Reservations	-	-	-	-	-	-	-
SUBTOTAL (Federal)	6,372	35,612	1,786	33,826	33,826	2,481,153	16,732
State & Private	4,329,430	12,767,042	2,026,517	11,949,525	10,740,523	226,067,745	1,851,838
GRAND TOTALS	4,335,802	12,802,654	2,028,303	11,983,851	10,774,351	228,548,898	1,868,570

* Column d + column e equals column g. The total of column e of this table equals the total of column g of Table 1a, Sheet #1.

SUMMARY OF SIGNS AND MONITORING OF LAND USE

Land Ownership	Distribution Data				Total (Forest & Non-Forest)		
	Area Reported Re-worked	Net Increase Re-worked once in Control Area	Area Under Wild & Cultivated Areas Destroyed	Area Under Re-work Non-Forest	Area Reported Re-worked	Area Under Wild & Cultivated Areas Destroyed	Area Under Re-work Non-Forest
Forest Forests	10,384	9,633	366,537	2,503	29,743	1,974,050	8,003
Non-Forest Forests	-	-	-	-	-	-	-
Other public domain	-	-	-	-	-	-	-
Other public domain	9,655	9,655	35,225	3,564	39,371	929,165	14,811
Other public domain	-	-	-	-	-	-	-
Other public domain	20,039	19,288	402,062	6,067	69,114	2,903,215	22,819
Other public domain	4,804,063	3,991,123	52,955,891	253,439	20,731,042	279,036,036	2,710,327
Other public domain	4,324,102	4,010,411	53,350,353	259,506	24,762,162	281,939,251	2,733,146

TABLE 4. 1937
SUMMARY OF KIPES ERADICATION WORK

1937 (1936-1937)

National Parks (List separately) a	Average of White Pine in Not Control Area b	NOT CONTROL AREA		Gross Eradication Initially c	TOTAL KIPES ERADICATION WORK		
		Total Average (Type of Lanes) d	Average not yet worked initially e		Average Total f	Gross Number Wild and Cultivated fibers Destroyed g	Gross Number of Deer Killed h
Acadia National Park, Maine	3,638	20,716	-	20,716	20,716	893,940	11,227
TOTALS	3,638	20,716	-	20,716	20,716	893,940	11,227

* Column d: column f = column e.

TABLE #4A SHEET #4

SUMMARY OF RIBES ERADICATION ON NATIONAL PARKS 1940 (W/USIVE)

National Parks (List separately)	ERADICATION WORK				TOTALS (Initial and Rework)			
	Gross Acreage Reported Re-Worked	Net Acreage Re-Worked in Control Area	Gross Number Wild and Cult. Ribes Destroyed	Gross Number 8-Hour Man-Days	Gross Acreage Reported Re-Worked	Net Acreage Initial and Re-Work	Gross Number Wild and Cult. Ribes Destroyed	Gross Number 8-Hour Man-Days
Acadia National Park, Maine	9,655	9,655	35,225	3,584	30,371	30,371	929,165	14,811
TOTALS - NAT. PARKS	9,655	9,655	35,225	3,584	30,371	30,371	929,165	14,811

17. 1. 1941. 1. 1. 1941. 1. 1. 1941.

TABLE 22. (Contd.)

SUMMARY OF WIPES ERADICATION ON STATE AND TERRITORY

(Continued)

State and Territory (Data by State)	Accreditation Work				Area in Acres	Single (Initial & Re-work)		
	Gross Acreage Reported Re-worked	Net Acreage Re-worked in Control Area	Gross Number Wild & Cultivated Ribs Destroyed	Gross Number E-Work Man-Days		Gross Number Wild & Cultivated Ribs Destroyed	Gross Number E-Work Man-Days	Gross Number E-Work Man-Days
Maine	724,034	724,034	12,105,025	129,833	1,154,000	2,594,339	57,045,193	370,384
New Hampshire	913,474	817,906	11,557,596	109,623	1,000,000	3,626,741	67,250,974	405,707
Vermont	154,713	136,604	2,756,134	43,208	1,000,000	375,891	14,456,356	162,384
Massachusetts	1,058,533	870,590	5,761,834	90,016	3,000,000	5,592,158	22,555,763	218,637
Rhode Island	311,226	152,437	375,344	53,881	1,000,000	335,716	644,846	75,094
Connecticut	462,332	321,839	4,807,549	93,357	1,000,000	816,335	7,303,269	133,079
New York	355,252	849,062	10,142,721	142,046	3,000,000	3,120,373	72,226,788	670,950
New Jersey	1,417	1,417	16,971	392	1,000,000	18,169	66,464	1,716
Pennsylvania	223,082	117,164	5,443,117	156,126	1,000,000	651,816	37,483,381	472,376
TOTAL	4,804,063	3,991,123	52,968,291	858,489	10,000,000	14,731,643	279,036,036	2,710,327

TABLE 44a. WHITE PINE

SUMMARY OF WHITE PINE ERADICATION ON NATIONAL FORESTS IN 1941

(Continued)

National Forests and big game areas (or regions)	Acreage of White Pine in Net Control Area	Net Control Area		Gross Acres Reported Initially Destroyed	Initial Sanitation Work		
		Total Acreage* (W.P. & Prot. Zones)	Acreage not yet worked initially		Gross Acres Control Area	Gross Number Wild & Cultivated Trees Destroyed	Gross Number 8-Hour Man-Days
a	b	c	d	e	f	g	h
White Mountain National Forest, Maine and N. H.	1,543	8,729	0	8,729	8,729	816,359	2,879
Allegheny National Forest, Pennsyl- vania	1,191	6,167	1,786	4,381	4,381	770,854	2,626
TOTALS	2,734	14,896	1,786	13,110	13,110	1,587,213	5,505

* Column c = Column d and column f.

STATEMENT OF LINES TRANSFERRING TO STATE

1900-1901

National Forests (List by Forests or Regions)	Description Work				Cubic Feet of Timber		
	Area Acquired Reported to Bureau	Net Acquire to Bureau in Current Year	Gross Volume Wild & Cultivated Area Destroyed	Net Volume to Bureau	Net Volume to Bureau in Current Year	Gross Volume Wild & Cultivated Area Destroyed	Net Volume to Bureau in Current Year
White Mountain National Forest, Maine and N. H.	8,972	8,729	324,078	1,916	17,458	1,140,437	4,795
Allegheny National Forest, Pennsylv- ania	1,406	904	62,759	587	5,285	833,613	3,213
TOTAL	10,384	9,633	386,837	2,503	22,743	1,974,050	8,008

STATISTICS OF ALL WORMS CONTROLLED, 1912

State	Cultivated Black Currant Eradication					Worm Sanitation					
	Number Inspections Made	Number Locations Found	Number Black Currants Destroyed		Number Man-Days	Number of Sanitation Zones		Acreage Worked		Number Killed per Unit, Rites Destroyed	Number Man-Days
			Nigrum	Other Cult.		Sanitation Zones Maintained	Sanitation Zones Destroyed	(1)	Total Acreage (2)		
Maine	-	-	-	-	-	2	5	766	1,735	114,357	463
New Hampshire	-	-	-	-	-	2	1	165	2,762	7,325	283
Vermont	-	-	-	-	-	1	-	-	2,230	4,914	409
Massachusetts	750,359	6,657	42,629	432	7,347	10	9	3,540	8,033	49,857	1,253
Rhode Island	110,137	1,917	16,219	1,093	1,929	1	5	1,775	19,936	5,695	444
Connecticut	318,344	32,695	7,464	42,397	14,610	8	13	5,411	64,943	35,430	2,757
New York	526,593	5,128	37,064	761	5,250	4	5	4,860	103,091	165,010	6,380
New Jersey	-	-	-	-	-	1	1	195	1,665	2,879	127
Pennsylvania	-	-	-	-	-	9	5	1,527	27,861	92,803	4,443
TOTALS	1,705,433	46,397	103,378	44,683	29,136	35	44	28,242	232,256	478,775	16,559

(1) Net acreage of Sanitation zones.

(2) Total acreage reported worked - initial and all re-workings.

TABLE 15A

SUMMARY OF ALL OTHER CONTROL PLOTS, 1948-1957

State	Mapping Control Areas		Total Number		Controlled White Pines			Number 5-Hour Map-Days
	No. Acres Mapped (White Pine and Protection Zones)*	Number 2-Hour Map-Days**	Plots Examined	Number Plots Not Examined	Number Plots Examined	Number Plots Not Examined	Number Plots Examined	
Maine	2,099,324	37,476	156,009	11,224	1,533	46,566	4,614	2,988
New Hampshire	1,433,688	40,788	28,521	5,731	634	711	-	219
Vermont	788,255	23,130	267,593	40,749	1,359	24,786	448	3,031
Massachusetts	828,483	20,706	4,764,167	32,259	10,466	21,618	7	8,702
Rhode Island	122,966	2,264	-	-	-	-	-	-
Connecticut	494,476	25,168	-	-	-	-	-	-
New York	1,949,681	43,782	1,931,067	158,033	10,473	261,257	1,941	13,896
New Jersey	-	-	-	-	-	-	-	-
Pennsylvania	652,676	45,115	919,478	32,595	1,975	566,925	1,974	7,306
TOTAL	8,369,549	238,429	8,036,895	280,591	1,504	921,863	8,984	36,142

*Data include only acreage detail mapped in net control area. In addition, considerable acreage has been detail mapped and subsequently discontinued from the control area, many areas have been remapped, and hundreds of thousands of acres of pine have been spot mapped.

**Data include time spent on all detail and spot mapping work.

SUMMARY OF ALL EXPENDITURES, 1935-42

State	Federal (All Agencies Including State WPA Projects)	State (Including All Coop Funds)		Grand Total (State and Federal Funds)	Expenditures of Regular Funds						
		Indirect Aid	Direct Aid (Rides Used)		B.P.I. B.E. & P.O.	B.E. & P.O.	Department of Interior			Total	
							National Parks	O & C	Indian Lands		
Maine	1,435,909.25	99,058.71	271,846.08	1,806,814.04	341,793.15	141.25	11,479.94	-	0	11,479.94	353,414.34
New Hampshire	1,397,148.64	126,245.90	668,290.03	2,191,684.57	523,744.31	2,422.21	-	-	-	-	526,186.42
Mont	715,106.01	42,892.57	118,832.71	876,831.29	176,206.28	-	-	-	-	-	176,206.26
Massachusetts	989,074.53	39,378.78	393,987.31	1,422,440.62	405,495.50 ⁽¹⁾	-	-	-	-	-	405,495.50
Rhode Island	232,321.47	37,502.87	36,267.54	306,091.88	49,651.46	-	-	-	-	-	49,651.46
Connecticut	756,908.93	93,024.27	97,601.86	947,535.06	139,961.54	-	-	-	-	-	139,961.54
New York	2,643,184.16	521,153.46	1,026,802.12	4,191,139.74	599,997.17	-	-	-	-	-	599,997.17
New Jersey	20,182.52	16,308.90	519.25	37,010.67	9,220.92	-	-	-	-	-	9,220.92
Pennsylvania	1,521,895.33	61,241.16	57,324.11	1,640,460.60	87,234.42	1,808.77	-	-	-	-	88,244.19
	9,711,730.84	1,036,806.62	2,671,471.01	13,420,008.47	2,333,304.73	3,231.03	11,479.94	-	-	11,479.94	2,348,377.80

(1) In addition, \$99,989.02 B.E. and P.O. funds expended for Cambridge regional office during the period July 1, 1935 to December 31, 1942.
No record of B.P.I. expenditures for regional office prior to July 1, 1935.

STATE OF NEW HAMPSHIRE

State	Federal P.F.A.				State P.F.A.			S.P.A.			Grand Total	
	Bureau	Forest Service	Dept. Interior	Total	State P.F.A. (all Federal)	Forest Service and State Dept.	Total	Bureau	Forest Service	Total	Grand Total	Grand Total
Maine	649,730.76	-	-	649,730.76	6,597.97	325,730.07	332,328.04	59,123.95	-	59,123.95	1,426.80	1,022,494.91
New Hampshire	632,428.87	-	-	632,428.87	20,595.37	149,343.77	169,939.14	68,597.21	-	68,597.21	-	870,962.22
Vermont	402,140.28	-	-	402,140.28	8,685.80	95,905.47	104,591.27	32,158.20	-	32,158.20	-	538,899.75
Massachusetts	407,457.56 ⁽¹⁾	-	-	407,457.56	17,413.86 ⁽²⁾	64,503.84	81,917.70	92,071.89	-	92,071.89	42,132.28	553,579.03
Rhode Island	48,258.65	-	-	48,258.65	2,700.56	117,642.65	120,343.21	12,427.98	-	12,427.98	1,540.00	132,670.01
Connecticut	83,153.99	-	-	83,153.99	232,690.84	177,053.96	409,744.80	22,479.39	-	22,479.39	101,569.21	616,947.39
New York	1,132,151.77	-	-	1,132,151.77	23,227.49	723,370.42	746,597.91	92,334.23	-	92,334.23	11,602.68	2,043,135.93
New Jersey	7,303.37	-	-	7,303.37	-	576.75	7,880.12	3,031.48	-	3,031.48	-	10,911.60
Pennsylvania	455,814.65	-	-	455,814.65	23,206.97	904,879.14	1,183,890.76	45,474.53	-	45,474.53	2,475.45	1,433,651.14
	3,818,439.90	-	-	3,818,439.90	336,116.66	2,619,713.74	2,955,830.40	397,753.96	-	397,753.96	162,546.42	7,353,353.04

(1) In addition, \$79,168.28 Federal Agency W.P.A. project funds and \$34,402.59 State W.P.A. project funds were expended for the Cambridge regional office.

(2) In addition, \$5,638.98 State W.P.A. project funds were expended for the Cambridge regional office.

Note - Some P.F.A. money was spent for regional office but no record available of the amount.

PART III

COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED
LANDS IN NORTHEASTERN REGION - WORK PROJECT BLR-3-1

From 1918-1921, the Federal Government cooperated with the states and other agencies in the Northeastern States in experimental control work on a dollar for dollar basis. A comprehensive control program was inaugurated in 1922 by the United States Department of Agriculture in cooperation with the state regulatory agencies to accomplish the control of blister rust by providing pine owners with the expert advice, leadership and supervision necessary to secure prompt and effective local eradication of Ribes in the pine growing regions. This program was supplemented by the blister rust control work performed under the various Federal Emergency Programs during the period 1933 to 1942, inclusive. The so-called "Lea Bill" enacted on April 26, 1940 authorized the expenditure of federal funds for white pine blister rust control work on private and state lands provided at least an equal amount shall have been appropriated, subscribed or contributed by state, county or local authorities or by individuals or organizations concerned. The first allotments of such federal funds for control work became available on July 1, 1941. Cooperative agreements between the Bureau of Entomology and Plant Quarantine and the several states within the Region form the working basis for this blister rust control project BLR-3-1.

Federal 3103.14 funds for cooperative Ribes eradication work on state and private lands were allotted to eight of the Northeastern States during the calendar year 1942. In addition, Federal Agency blister rust control projects were operated for varying periods under the State W.P.A. Program in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York and Pennsylvania. Due to the urgency of other important national defense projects, such as airport construction, only a relatively few relief laborers were available for assignment to our W.P.A. projects during 1942. Actual expenditures amounted to approximately one-third of the total W.P.A. allotments. The control project in Maine was terminated on May 6th, while W.P.A. activities in Vermont ceased on July 12th by order of the respective State W.P.A. Administrators. The project in New Hampshire was temporarily suspended on July 9th and resumed on August 12th. All W.P.A. projects in the Region were terminated by January 31, 1943. A few C.C.C. and S.C.S. employees were also assigned to blister rust control work on state and privately-owned lands for a short period prior to July 1st in Rhode Island and New York.

State and Local Cooperation on Project BLR-3-1 During Calendar Year 1942

State and local cooperative expenditures and contributed services for Project BLR-3-1 during the calendar year 1942 amounted to \$74,957.87. Of this total, \$47,628.17 was from state blister rust appropriations or other state funds, \$2,193.91 was subscribed by individual cooperators, \$15,601.04 by towns, and \$9,534.75 by counties. Federal 3103.14 expenditures during the calendar year totalled \$57,291.27.

In Maine and New Hampshire, the towns are requested to raise money for control work at their annual meetings which are held in March. Town cooperation was solicited in New York for the first time in 1942 when the state legislature passed a law permitting towns to appropriate up to \$1,000. annually for blister rust control work. Under a new plan adopted in 1940, towns in Connecticut make small annual appropriations for blister rust control maintenance work, and the funds are allowed to accumulate until such time as the money is needed for control activities. Towns in Vermont and Massachusetts cooperated by furnishing crew transportation. However, town appropriations were solicited in Vermont during the early part of 1943 and an enabling act authorizing towns to appropriate funds for blister rust control has been introduced into the state legislature.

County cooperation during 1942 was restricted to New York where five counties made \$9,534.75 available for control work. A total of \$2,193.91 was also expended by 43 individual cooperators in seven states.

Table 1 summarizes local cooperation, by states and agencies, during the calendar year 1942 and the period 1918 to 1942, inclusive.

Table 1 - Local Cooperation on Blister Rust Control Work in Northeastern Region

Calendar Year 1942

State	Individual Cooperation			Town Cooperation			County Cooperation	
	No. Cooperators		Amount Spent By Individual Cooperators*	No. Town		Total Amount Town Money Expended	No. County Allotments	Amount County Funds Expended
	Ribes Eradication	Canker Elimination		Appropriations	Contributions			
Maine	1	-	\$20.80	26	-	\$3,779.14	-	-
N. H.	1	-	413.70	20	-	5,322.31	-	-
Vt.	6	3	1,065.80	-	5	468.77	-	-
Mass.	32	-	291.90	-	6	2,632.54	-	-
Conn.	2	-	284.75	3	-	548.05	-	-
N. Y.	6	-	76.96	5	-	2,850.23	5	\$9,534.75
Penns.	-	-	40.00	-	-	-	-	-
Totals	43	3	\$2,193.91	54	11	\$15,601.04	5	\$9,534.75
*Includes value of cultivated Ribes destroyed								
1918-1942, inclusive								
Maine	11,103	24	\$85,270.18	783	20	\$132,922.52	-	-
N. H.	691	-	48,617.27	1,434	20	434,606.43	6	\$1,724.08
Vt.	2,347	12	74,926.68	14	64	23,882.36	-	-
Mass.	21,750	-	101,372.62	4	47	23,175.90	-	-
R. I.	8	-	581.36	-	-	-	-	-
Conn.	499	-	9,881.24	39	51	27,372.85	-	-
N. Y.	5,964	1	174,333.70	5	3	3,210.63	53	51,754.59
Penns.	302	-	2,233.68	-	-	-	-	-
Totals	42,664	37	\$497,216.73	2,284	205	\$645,170.69	59	\$53,478.67

Ribes Eradication Work on State and Privately-Owned Lands - All Programs

The present net blister rust control area on state and privately-owned lands in the Northeastern Region comprises 12,767,042 acres, of which 4,529,430 acres are in white pine growth meeting minimum stocking requirements. The latter acreage represents 99.8% of all the white pine acreage in the total net control area in the Region. Initial Ribes eradication work has been performed on 10,740,525 acres, or 84.1% of the net control area, and 3,991,123 acres have been reworked once. In addition, several hundred thousand acres have been worked and subsequently discontinued from the control area for various reasons, such as: pine no longer exists due to fire, hurricane, logging, etc.; pine did not meet minimum stocking requirements; areas of poor quality pine, and reduction in width of protection zones. At the end of 1942, initial work was still needed on 2,026,517 acres.

During 1942, Ribes eradication work was performed on 488,064 acres of state and privately-owned lands in the Northeastern States, a total of 3,162,140 wild Ribes and 4,645 cultivated bushes being destroyed as a result of 32,474 man-days labor by employees assigned to projects conducted under the Regular Cooperative, CCC, and State WPA Programs. Of the total acreage worked, 78.2% was in connection with projects under the Regular Cooperative Program. Tables 2 and 3 summarize the results accomplished by states and programs.

Summary of All Cooperative Rabbit Eradication Work on State and
Private Lands in Northeastern Region During 1942
(By States)

State	Type of Work	Acres Worked	No. Rabbits Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Rabbits
Maine	Initial	17,642	253,262	370	1,227	.07	16.1
	Re-Erad.	15,279	263,848	180	2,397	.07	7.5
	Total	32,921	517,110	550	3,624	.07	10.3
N. H.	Initial	3,728	110,408	-	979	.11	17.2
	Re-Erad.	17,411	237,739	136	3,922	.10	6.4
	Total	21,139	348,147	136	4,901	.11	7.5
Vt.	Initial	15,019	150,540	477	1,313	.09	10.3
	Re-Erad.	8,464	46,234	-	776	.09	5.5
	Total	23,483	196,774	477	2,089	.09	6.4
Mass.	Initial	4,643	24,626	14	255	.05	5.3
	Re-Erad.	68,142	180,871	1,031	3,498	.05	2.7
	Total	72,785	205,497	1,045	3,753	.05	2.6
R. I.	Initial	3,448	1,932	-	410	.12	0.6
	Re-Erad.	1,730	954	-	195	.11	0.6
	Total	5,178	2,886	-	605	.12	0.6
Corn.	Re-Erad.	33,511	113,790	69	1,212	.04	3.4
N. Y.	Initial	83,303	530,596	1,530	5,982	.07	10.0
	Re-Erad.	151,298	640,151	383	7,714	.05	4.2
	Total	234,601	1,170,747	1,913	13,696	.06	6.3
Penn.	Initial	16,245	268,559	378	2,338	.14	16.6
	Re-Erad.	3,801	8,630	22	256	.08	8.7
	Total	19,446	277,189	400	2,594	.13	10.3
All States	Initial	149,028	1,669,923	2,769	12,504	.08	11.7
	Re-Erad.	339,036	1,492,217	1,876	19,970	.06	4.6
	Total	488,064	3,162,140	4,645	32,474	.07	6.3

Table 3 - Summary of All Cooperative Rabbit Eradication Work on State and Private Lands in Northeastern Region During 1942

By Program

Program	Type of Work	Acres Worked	No. Rabbits Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Rabbits
Regular Coop.	Initial	107,157	1,095,347	2,092	7,153	.07	10.8
	Re-Erad.	274,577	1,216,246	755	15,637	.06	4.6
	Total	381,734	2,311,593	2,847	22,790	.06	6.1
State W.P.A.	Initial	41,861	574,576	677	5,351	.13	13.7
	Re-Erad.	64,399	275,971	1,121	4,324	.07	4.3
	Total	106,260	850,547	1,798	9,675	.09	8.0
C.C.C.	Re-Erad.	60	0	0	9	.15	0
All	Initial	149,028	1,669,923	2,769	12,504	.08	11.2
	Re-Erad.	339,036	1,492,217	1,876	19,970	.06	4.6
	Total	488,064	3,162,140	4,645	32,474	.07	6.3

Ribes Eradication Work on State and Privately-Owned Lands - Regular Cooperative Program

All of the Northeastern States conducted Ribes eradication work on state and privately-owned lands under the Regular Cooperative Program during 1942. A total of 2,311,593 wild Ribes and 2,847 cultivated bushes were removed on the 381,744 acres examined as a result of 22,790 man days' labor. The total acreage cleared of Ribes under this program represents an increase of 73.1% over the preceding year, which was primarily due to additional Federal \$103.14 funds being available for control work in 1942 and the greater use of scouting methods in areas with relatively few Ribes.

Table 4 - Summary of Ribes Eradication Work on State and Private Lands During 1942 Performed Under Regular Cooperative Program

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Maine	Initial	17,642	283,262	370	1,227	.07	16.1
	Re-Erad.	35,279	263,848	180	2,397	.07	7.5
	Total	52,921	547,110	550	3,624	.07	10.3
N. H.	Initial	6,495	36,135	-	360	.06	5.6
	Re-Erad.	33,398	177,242	132	3,162	.09	5.3
	Total	39,893	213,377	132	3,522	.09	5.4
Vt.	Initial	12,108	80,212	421	611	.05	6.7
	Re-Erad.	7,139	30,457	-	501	.07	4.3
	Total	19,247	110,669	421	1,112	.06	5.5
Mass.	Initial	4,471	24,459	14	247	.06	5.5
	Re-Erad.	29,895	54,667	95	1,503	.05	1.8
	Total	34,366	79,136	109	1,750	.05	2.3
R. I.	Initial	736	65	-	6	.008	0.09
	Re-Erad.	418	-	-	3	.007	-
	Total	1,154	65	-	9	.007	0.06
Conn.	All						
	Re-Erad.	53,511	113,790	69	1,212	.04	3.4
N. Y.	Initial	61,748	664,425	1,276	4,496	.07	10.8
	Re-Erad.	132,498	570,673	257	6,687	.05	4.3
	Total	194,246	1,235,098	1,533	11,183	.06	6.4
Penn.	Initial	3,967	6,779	11	206	.05	1.7
	Re-Erad.	2,439	5,569	22	172	.07	2.3
	Total	6,406	12,348	33	378	.06	1.9
All States	Initial	107,167	1,095,347	2,092	7,153	.07	10.2
	Re-Erad.	274,577	1,216,246	755	15,637	.06	4.4
	Total	381,744	2,311,593	2,847	22,790	.06	6.0

Due to the limited number of employees available for Ribes eradication work in some localities, the district leaders were instructed to perform Ribes eradication work by scouting methods whenever time permitted during the 1942 season. Twenty-six of the district leaders in seven states spent 233 man days on such activities and the results of their work are included in Table 4. In New York, three individual cooperators and one state employee spent 16 man days assisting three of the district leaders. The results of the scouting work performed by the district leaders are summarized, by states, in Table 5.

Table 5 -- Summary of Ribes Eradication Work Performed By
District Blister Rust Control Leaders During 1942

(Data are included in Table 4)

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Maine	Initial	909	126	-	6	.006	0.14
	Re-Erad.	3,441	319	-	13	.003	0.09
	Total	4,350	445	-	19	.004	0.10
N. H.	Initial	2,239	2,712	-	44	.019	1.21
	Re-Erad.	1,298	902	-	14	.010	0.69
	Total	3,537	3,614	-	58	.016	1.02
Vt.	Initial	137	672	-	3	.021	4.90
	Re-Erad.	868	1,564	-	17	.019	1.80
	Total	1,005	2,236	-	20	.020	2.22
Mass.	Initial	62	35	-	3	.048	0.56
	Re-Erad.	1,198	645	-	18	.015	0.54
	Total	1,260	680	-	21	.016	0.54
R. I.	Initial	736	65	-	7	.009	0.09
	Re-Erad.	418	-	-	2	.004	-
	Total	1,154	65	-	9	.007	0.06
N. Y.	Initial	6,497	12,166	13	67	.010	1.87
	Re-Erad.	5,564	4,477	3	50	.008	0.81
	Total	12,061	16,643	16	117	.009	1.34
Penna.	All Initial	1,589	100	-	5	.003	0.06
All States	Initial	12,169	15,876	13	135	.011	1.31
	Re-Erad.	12,787	7,907	3	114	.008	0.62
	Total	24,956	23,783	16	249	.009	0.95

Based on totals for all states, the district leaders scouted an average of 100.2 acres per man day and destroyed approximately one Ribes per acre. The acreage scouted by the district leaders represents 6.5% of the total area cleared of Ribes on state and private lands under the Regular Cooperative Program during 1942.

Ribes Eradication Work on State and Privately-Owned Lands - State W.P.A. Program

Ribes eradication work was performed on state and privately-owned lands during 1942 by employees assigned to the Federal Agency projects under the State W.P.A. Program in New Hampshire, Vermont, Massachusetts, Rhode Island, New York and Pennsylvania. A total of 106,260 acres were cleared of 850,547 wild Ribes and 1,798 cultivated bushes as a result of 9,675 man days' labor by W.P.A. workers and a few state employees who assisted on the W.P.A. projects in New Hampshire, Massachusetts and New York. Several towns in Vermont and Massachusetts also cooperated by furnishing transportation for the W.P.A. crews. The total acreage cleared of Ribes under the State W.P.A. Program represents 21.7% of all the control work performed in the Region during 1942. Compared with the preceding year, there was a decrease of 64.2% in the acreage cleared of Ribes under the W.P.A. Program. This drastic reduction was due to the fact that only a limited number of relief laborers were obtainable for our control projects during 1942. No W.P.A. employees were available for Ribes eradication work in Maine as the project was terminated on May 6, 1942. Similar action was taken in Vermont on July 12th, while the project was suspended in New Hampshire from July 9th to August 12th. Very few laborers were assigned to the project in the latter state after activities were resumed in August.

Table 6 summarizes the results of the 1942 Ribes eradication work under the State W.P.A. Program by states and classes of work.

Table 6 - Summary of Ribes Eradication Work on State and Private Lands
Performed Under State W.P.A. Program During 1942

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
N.H.	Initial	2,233	74,273	-	619	.28	33.3
	Re-Erad.	4,013	60,497	4	760	.19	15.3
	Total	6,246	134,770	4	1379	.22	21.6
Vt.	Initial	2,911	70,328	56	702	.24	24.8
	Re-Erad.	1,325	15,777	-	275	.21	11.9
	Total	4,236	86,105	56	977	.23	20.3
Mass.	Initial	172	157	-	8	.05	0.9
	Re-Erad.	38,247	126,204	986	1995	.05	3.3
	Total	38,419	126,361	986	2003	.05	3.3
R.I.	Initial	2,712	1,867	-	404	.15	0.7
	Re-Erad.	1,252	954	-	183	.15	0.8
	Total	3,964	2,821	-	587	.15	0.7
N.Y.	Initial	21,555	166,171	254	1486	.07	3.7
	Re-Erad.	18,800	69,478	131	1027	.05	3.7
	Total	40,355	235,649	385	2513	.06	3.6
Penna.	Initial	12,278	261,780	367	2132	.17	21.7
	Re-Erad.	762	3,061	-	84	.11	4.0
	Total	13,040	264,841	367	2216	.17	20.3
All States	Initial	41,861	574,576	677	5351	.13	13.7
	Re-Erad.	64,399	275,971	1121	4324	.07	4.3
	Total	106,260	850,547	1798	9675	.09	8.0

Ribes Eradication Work on State and Privately-Owned Lands - C.C.C. Program

Ribes eradication work on state and private lands under the C.C.C. Program in 1942 was restricted to Rhode Island where one crew spent 9 man days reworking 60 acres, no Ribes being found on the area. It was necessary to terminate the C.C.C. project in Rhode Island due to the liquidation of all C.C.C. activities by July 1, 1942. A small amount of Ribes eradication work was also performed by C.C.C. personnel at Acadia National Park in Maine during 1942, the results being summarized in this report under Section V - Blister Rust Control on National Parks - Financial Project BLR-5.

Nursery Sanitation Work Under Project BLR-3-1 During 1942

The environs of 14 nurseries in Connecticut, New York and Pennsylvania were reexamined for Ribes during 1942 in connection with projects conducted under the Regular Cooperative, State W.P.A. and S.C.S. Programs. A total of 7,462 wild Ribes and 87 cultivated bushes were located and destroyed on the 7,353 acres examined as a result of 245 man days' labor. There were 24,704,000 white pines being grown in the 14 nurseries protected in 1942. Control work was not essential during the current year around the other 24 nurseries which are maintaining sanitation zones in this Region.

Table 7 summarizes the results of the 1942 nursery sanitation work by states and programs. The work under the State W.P.A. and S.C.S. Programs was restricted to New York. It will be noted that very few Ribes were found in the sanitation zones, the average being one bush per acre for all nurseries. Over 86% of the bushes pulled were on the projects in Connecticut.

Table 7 - Summary of Nursery Sanitation Activities Under Work Project BLR-3-1 in Northeastern Region During 1942 (All Re-Eradication Work)

State	Program	No. Nurseries Worked	Est. No. White Pines in Nurseries	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
					Wild	Cult.		Man Days	Ribes
Conn.	All Regular	8	2,210,000	2,812	6,418	87	34	.01	2.3
N. Y.	Regular	1	10,000,000	1,605	337	-	26	.02	0.2
	State W.P.A.	1	4,591,000	1,150	144	-	44	.04	0.1
	S.C.S.	2	1,500,000	1,050	429	-	20	.02	0.4
	Total	4	16,091,000	3,805	910	-	90	.02	0.2
Penna.	All Regular	2	6,403,000	736	134	-	121	.16	0.2
All States	Regular	11	18,613,000	5,153	6,889	87	181	.03	1.4
	State W.P.A.	1	4,591,000	1,150	144	-	44	.04	0.1
	S.C.S.	2	1,500,000	1,050	429	-	20	.02	0.4
	Total	14	24,704,000	7,353	7,462	87	245	.03	1.0

Status of Nursery Sanitation Work in Northeastern States

At the present time, sanitation zones are being maintained around 38 nurseries in the Northeastern States. Forty-four other nurseries established such zones but they have been abandoned for various reasons. Table 8 lists detailed information on the nurseries that are maintaining sanitation zones by states and ownership classes.

Table 8 - Status of Nursery Sanitation Work in Northeastern States
December 31, 1942

State	Nurseries Where Protection Established and Being Maintained				Maximum Acreage of Control Area	Number Nurseries Protected During 1942	No. Additional Nurseries Which Established Control But Now Abandoned
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	409	-	0
N. H.	-	1	1	2	749	-	1
Vt.	-	1	-	1	700	-	-
Mass.	-	4	6	10	3,210	-	0
R. I.	-	-	1	1	770	-	5
Corn.	-	3	5	8	2,612	8	13
N. Y.	2	2	-	4	4,650	4	5
N. J.	-	1	-	1	600	-	1
Penna.	1	4	4	9	4,136	2	3
Totals	3	17	18	38	23,036	14	24

List of Nurseries Maintaining Sanitation Zones in Northeastern States

Acreage of
Sanitation Zone

Maine

Western Maine Nursery - Fryeburg, Maine 247
State Nursery - Orono, Maine 162
409

New Hampshire

Keene Forestry Associates - Keene, N. H. 250
State Nursery - Bosworth, N. H. 499
749

Vermont

State Nursery - Essex Junction, Vt. 700

List of Nurseries Maintaining Sanitation Zones in Northeastern States
(Continued)

	<u>Acres of Sanitation Zone</u>
<u>Massachusetts</u>	
Department of Conservation Nursery - Amherst, Mass.	225
Department of Conservation Nursery - Bridgewater, Mass.	100
Department of Conservation Nursery - Clinton, Mass.	150
Department of Conservation Nursery - Erving, Mass.	50
Franklin Forestry Company - Shelburne Falls, Mass.	435
Kelsey Highlands Nursery - Buxford, Mass.	900
Little Tree Farm Nursery - Framingham, Mass.	725
Wyman Nursery - Framingham, Mass.	1,000
Littlefield-Wyman Nursery - No. Abington, Mass.	4,625
Bay State Nursery - Abington, Mass.	8,210
<u>Rhode Island</u>	
Rhode Island Nursery (private) - Middleton, R. I.	770
<u>Connecticut</u>	
Connecticut Agri. Experiment Station Nursery	251
Elfgren Nursery - East Killingly, Conn.	280
Northeastern Forestry Company - Cheshire, Conn.	537
A. N. Pierson Inc. - Cromwell, Conn.	355
State Nursery - Barkhamsted, Conn.	356
State Nursery - Tolland, Conn.	365
Sunny Valley Nursery - New Milford, Conn.	480
Great Pond Nursery - Simsbury, Conn.	188
	2,812
<u>New York</u>	
State Nursery - Saratoga Springs, N. Y.	2,310
State Nursery - Lowville, N. Y.	1,150
*State Nursery - Painted Post, N. Y.	565
*State Nursery - Elg Flats, N. Y.	625
	4,650

*Leased to Soil Conservation Service

List of Nurseries Maintaining Sanitation Zones in Northeastern States
(Continued)

	<u>Acres of Sanitation Zone</u>
<u>New Jersey</u>	
State Nursery - Washington Crossing, N. J.	600
<u>Pennsylvania</u>	
Clearfield State Nursery - Clearfield, Penna.	370
Greenwood State Nursery - Petersburg, Penna.	411
Mt. Alto State Nursery - Mount Alto, Penna.	366
Rockview State Nursery - Pleasant Gap, Penna.	354
S.C.S. Nursery - Mt. Eagle, Penna.	215
Wilmore Realty Co. Nursery - Windber, Penna.	215
Andorra Nursery - Chester Hill, Penna.	1,065
Fairview Nursery - Fairview, Penna.	559
Doyle Nursery - Seven Stars, Penna.	581
	<u>4,136</u>

Treatment of Diseased White Pines During 1942 - Work Project BLR-1-1

W.P.A. employees in two Vermont districts and six New York districts were assigned to blister rust canker elimination work on state and county lands in 1942. A few state and county employees also assisted on such activities in New York. In addition to the work conducted under the State W.P.A. Program, three landowners in Vermont paid the entire costs of having blister rust infections removed from their pines, such activities being supervised by the local district blister rust control leader. In some instances, the work in plantations on state and county lands was combined with pruning since it is generally more practicable to prune the lower branches than to inspect each one for blister rust cankers. Table 9 summarizes the results of the 1942 blister rust canker elimination work by states and programs.

Table 9 - Summary of Blister Rust Canker Elimination Activities Under Work Project BLR-3-1 in Northeastern Region During 1942

State	Program	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
					Branch	Stem	
Vt.	Regular	755	10	81	111	2	16
	State W.P.A.	21,457	985	786	895	-	367
	Total	22,212	995	867	1006	2	383
N.Y.	All State W.P.A.	323,192	8,654	7,471	7970	152	1476
All States	Regular	755	10	81	111	2	16
	State W.P.A.	344,649	9639	8257	8865	152	1843
	Total	345,404	9649	8338	8976	154	1859

Mapping of White Pine Areas and Protection Zones Under Work Project BLR-3-1 During 1942

Control area (white pine and protection zones) mapping work was conducted in all states except Rhode Island and Connecticut during 1942, a total of 384,896 acres being mapped in detail. In addition, 339,621 acres were examined and definitely eliminated from control work because the white pine in these areas did not meet minimum stocking requirements, and 424 miles of control area boundary lines were painted in the field. This mapping work required 9,769 man days' labor by state and W.P.A. employees and the three district blister rust control leaders in Vermont. W.P.A. workers were available for mapping work in six states from January 1 to the early part of May. However, during the last three months of the year only a limited number of these men were obtainable

for such activities in New Hampshire, Massachusetts, New York and Pennsylvania. Mapping projects under the Regular Cooperative Program were restricted to Vermont and New York. In the former state, the three district leaders performed mapping work themselves as no W.P.A. labor was available after July 12th, while in New York several state employees were assigned to pre-eradication survey work before and after the Ribes eradication season. Table 10 summarizes the results of the 1942 mapping work by states and programs.

Table 10 - Control Area (White Pine and Protection Zones) Mapping Under Work Project ELP-3-1 in Northeastern Region During 1942

State	Program	Acreage Mapped in Detail	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days
Maine	All State W.P.A.	63,771	102,977	-	1,376
N.H.	"	59,189	9,053	-	2,855
Vt.	Regular	11,056	2,500	-	23
	State W.P.A.	26,161	40,175	-	802
	Total	37,217	42,675	-	825
Mass.	All State W.P.A.	84,124	101,771	71	1838
N.Y.	Regular	62,280	52,169	-	165
	State W.P.A.	50,517	30,976	-	1552
	Total	112,797	83,145	-	1717
Penna.	All State W.P.A.	27,793	-	353	1156
All States	Regular	73,336	54,669	-	188
	State W.P.A.	311,560	284,952	424	9581
	Total	384,896	339,621	424	9769

Funds For Project BLR-3-1 During Calendar Year 1942

Under the new uniform project system, all Federal 3103.14 expenditures are charged to Project BLR-3-1. State and local cooperative expenditures and contributed services for this project during the calendar year 1942 were classified in accordance with the items listed for Project BLR-3-1 in the statements of estimated state and local expenditures and contributions submitted by the respective state cooperators for the fiscal years 1942 and 1943 which were used as a basis for allotting Federal 3103.14 funds. All W.P.A. expenditures on the projects under the State W.P.A. Program during the calendar year 1942, except those for salaries and expenses of the district blister rust control leaders and wages of several clerks, were charged to Work Project BLR-3-1. The cost of the few C.C.C. and S.C.S. employees who were assigned to Ribes eradication and nursery sanitation work in Rhode Island and New York for a short period was also charged to this work project.

As indicated in Table 11, Federal 3103.14 expenditures for Project BLR-3-1 during the calendar year 1942 amounted to \$57,291.27 while expenditures and contributed services by the states and local cooperators totalled \$74,957.87, or \$17,666.60 more than the Federal 3103.14 expenditures on the basis of totals for all states. However, in Maine and Vermont, the Federal expenditures exceeded the state and local cooperative funds on the calendar year basis. The Federal expenditures in Maine will be matched on a dollar for dollar basis for the fiscal year 1943, but there may be a small deficit in Vermont.

Table 11 - Statement of Funds Expended During Calendar Year 1942 on Work Project BR-1-1

State	State and Local Cooperative Funds					Federal Funds				Total State and Federal Funds	
	State Appropriations	Individuals	Towns	Counties	Total	R.E. and P.O. (3103.14)	W.P.A.	C.C.C.	S.C.S.		Total
Maine	3,837.16	20.80	3,779.14	-	7,637.10	9,080.16	6,334.90	-	-	15,415.06	23,052.16
N. H.	4,446.06	413.70	5,322.31	-	10,182.07	8,449.38	17,675.38	-	-	26,124.76	36,306.83
Vt.	712.46	1,065.80	468.77	-	2,247.03	4,632.61	5,238.30	-	-	12,870.91	15,117.94
Mass.	3,912.07	291.90	2,632.54	-	6,836.51	4,603.62	15,526.95	-	-	20,130.57	26,967.08
R. I.	2,276.78	-	-	-	2,276.78	-	2,700.55	35.65	-	2,736.21	5,012.99
Conn.	4,839.96	284.75	548.05	-	5,672.76	3,134.25	-	-	-	3,134.25	8,807.01
N. Y.	26,181.52	76.96	2,850.23	9,534.75	38,643.46	26,271.71	19,584.38	-	37.00	45,893.09	84,536.55
Penn.	1,422.16	40.00	-	-	1,462.16	1,119.54	12,156.16	-	-	13,275.70	14,737.86
All States	47,628.17	2,193.91	15,601.04	9,534.75	74,957.87	57,291.27	82,216.63	35.65	37.00	139,580.55	214,538.42

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Annex 1C - Bureau of Entomology and Plant Quarantine Project 3103.14 Funds
For Blister Rust Control Work in Northeastern States
 (All Charged to Project BLR-3-1)

Net Allotments

State	Fiscal Year 1942	Fiscal Year 1943	Total
Maine	\$4,793.00	\$13,000.00	\$17,793.00
N. H.	4,532.96	12,000.00	16,532.96
Vt.	1,243.81	5,900.00	7,143.81
Mass.	2,747.83	8,300.00	11,047.83
R. I.	0*	3,100.00	3,100.00
Conn.	1,935.00	5,800.00	7,735.00
N. Y.	17,748.66	40,400.00	58,148.66
Penna.	0	3,500.00	3,500.00
Total	\$33,001.26	\$92,000.00	\$125,001.26

*An allotment of \$534. was originally made to Rhode Island and later this amount was transferred to Maine.

Expenditures

State	Calendar Year 1941	Calendar Year 1942	Total	Unexpended Balance of Fiscal Year 1942 Allotment	Balance of Fiscal Year 1943 Allotment Available for Period Jan. 1 to June 30, 1943
Maine	\$3,199.60	\$9,080.16	\$12,279.76	\$5.40	\$5,507.84
N. H.	1,938.38	8,449.38	10,387.76	94.20	6,051.00
Vt.	324.40	4,632.61	4,957.01	43.97	2,142.83
Mass.	1,854.60	4,603.62	6,458.22	0	4,559.61
R. I.	0	0	0	0	3,100.00
Conn.	925.40	3,134.25	4,059.65	3.80	3,671.55
N. Y.	7,351.96	26,271.71	33,623.67	649.44	23,875.55
Penna.	0	1,119.54	1,119.54	0	2,380.46
Total	\$15,624.34	\$57,291.27	\$72,915.61	\$796.81	\$51,288.84

Table 13 - Summary of Ribes Eradication Work on State and Privately-Owned
Lands in Northeastern States During Period 1918-1942, Inclusive, By States

Initial Control Work

State	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
		Wild	Cult.		Man Days	Ribes
Maine	2,330,713	44,802,899	137,269	240,551	.10	19.3
N. H.	3,168,744	55,540,819	152,559	296,079	.09	17.6
Vt.	491,639	11,682,561	15,663	119,176	.24	23.8
Mass.	2,029,797	16,539,006	257,923	128,619	.06	8.3
R. I.	329,347	255,813	13,689	21,213	.06	0.8
Conn.	443,288	2,466,403	29,317	39,722	.09	5.6
N. Y.	2,539,900	61,959,759	124,308	688,904	.27	24.4
N. J.	16,742	47,780	1,713	1,324	.08	3.0
Penna.	599,261	31,989,140	51,124	316,250	.53	53.5
Totals	11,949,031	225,284,180	783,565	1,851,838	.15	18.9

Re-Eradication

Maine	724,034	12,090,335	14,690	129,833	.18	16.7
N. H.	913,474	11,551,336	6,260	109,628	.12	12.7
Vt.	154,713	2,755,942	2,192	43,208	.28	17.8
Mass.	1,058,533	5,737,477	24,357	90,018	.09	5.4
R. I.	311,226	365,336	10,008	53,881	.17	1.2
Conn.	462,332	4,797,187	10,362	93,357	.20	10.4
N. Y.	955,252	10,129,028	13,693	182,046	.19	10.6
N. J.	1,417	16,956	15	392	.28	12.0
Penna.	223,082	5,439,996	3,121	156,126	.70	24.4
Totals	4,804,063	52,883,593	84,698	858,489	.18	11.0

Initial and Re-Eradication

Maine	3,054,747	56,893,234	151,959	370,384	.12	18.7
N. H.	4,081,818	67,092,155	158,819	405,707	.10	16.5
Vt.	646,352	14,438,503	17,855	162,384	.25	22.4
Mass.	3,088,330	22,276,483	282,280	218,637	.07	7.3
R. I.	640,573	621,149	23,697	75,094	.12	1.0
Conn.	905,620	7,263,590	39,679	133,079	.15	8.1
N. Y.	3,495,152	72,088,787	138,001	870,950	.25	20.7
N. J.	18,159	64,736	1,728	1,716	.09	3.7
Penna.	822,343	37,429,136	54,245	472,376	.57	45.6
Totals	16,753,094	278,167,773	868,263	2,710,327	.16	16.7

The data for Table 13 were compiled from the state leaders' annual statistical reports. In 1937, the following adjustments were made in the acreage figures for the period 1918-1937, inclusive:

Maine - 1,017,911 acres were deducted from the total of the yearly acreages of initial work reported up to 1937, inclusive. This reduction represented eliminated area that was included in original acreage figures for years 1921-1930, inclusive, when the control work was performed on the owner-labor basis. These eliminated areas did not contain sufficient pine to justify control work.

Vermont - 13,560 acres added to initial work and deducted from rework acreage reported up to 1937, inclusive. These 13,560 acres were reported as reworked.

Connecticut - 32,197 acres added to initial work and deducted from rework acreage reported up to 1937, inclusive. These 32,197 acres were reported as reworked.

The following additional adjustment was made at the end of 1942 to make the data as compiled from the state leaders' annual reports agree with the CO-105 records:

Maine - 8,768 acres deducted from initial acreage reported up to 1942, inclusive, and added to reworked acreage for all years.

Table 14 - Results of All Ribes Eradication Work on State and Private Land in Northeastern States During Period 1918-1942, Inclusive, by Program

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Regular Cooperative	Initial	8,299,041	102,819,762	610,636	661,637	.08	13.4
	Re-Erad.	1,833,488	10,488,911	25,211	116,258	.06	5.0
	Total	10,132,529	113,308,673	635,847	778,091	.08	11.2
C.C.C.	Initial	1,361,621	48,131,238	74,626	671,116	.12	52.4
	Re-Erad.	1,186,712	16,280,692	10,368	417,910	.13	13.7
	Total	2,548,333	64,411,930	85,094	1,119,026	.14	23.3
S.C.S.	Initial	20,451	651,444	360	9,964	.19	51.2
	Re-Erad.	10,120	18,830	-	2,185	.15	1.2
	Total	30,571	670,274	360	12,149	.17	51.2
W.P.A. (F.A.)	Initial	1,927,319	63,977,156	85,141	455,305	.20	35.8
	Re-Erad.	1,479,148	23,753,574	32,843	258,205	.17	16.2
	Total	3,406,467	87,730,730	117,984	713,510	.21	26.3
W.P.A. (State)	Initial	90,665	1,754,611	2,892	11,897	.13	19.1
	Re-Erad.	154,784	794,861	2,427	13,310	.09	5.8
	Total	245,449	2,549,472	5,319	25,207	.10	10.0
P.W.A.	Initial	179,970	7,639,253	7,297	33,419	.19	12.7
	Re-Erad.	162,541	1,368,399	5,379	16,156	.10	3.5
	Total	342,511	9,007,652	12,676	49,575	.15	8.5
C.W.A. and E.R.A.	Initial	20,547	174,137	1,600	4,500	.22	6.0
	Re-Erad.	7,704	158,586	306	3,270	.12	20.4
	Total	28,251	332,723	1,906	7,770	.09	11.4
A.R.A.	Initial	10,639	112,491	948	3,564	.33	20.7
	Re-Erad.	5,714	13,779	110	772	.10	3.1
	Total	16,353	126,270	1,058	4,336	.27	7.2
N.Y.A.	Initial	373	4,280	-	85	.83	11.5
	Re-Erad.	555	4,741	-	31	.06	2.5
	Total	928	9,021	-	116	.15	9.1
N.V.S.	Initial	1,416	19,608	65	261	.17	17.9
	Re-Erad.	286	1,220	54	36	.13	2.5
	Total	1,702	20,828	119	297	.16	19.3
All Programs	Initial	11,912,042	225,284,180	783,565	1,851,856	.16	13.8
	Re-Erad.	4,841,052	52,883,593	84,693	853,102	.13	11.0
	Total	16,753,094	278,167,773	868,258	2,710,127	.15	15.7

Note: Acreage of initial Ribes eradication work under Regular Cooperative Program adjusted by deducting 1,017,911 acres from total of yearly acreage reported since 1918. This reduction represents eliminated area that was included in original acreage figures for Maine during period 1921-1930, inclusive, as explained under Table 13.

In Table 14 which summarizes the eradication work by program, it is not possible to make the other adjustment in acreage indicated for Table 13 which lists the totals by states.

Table 15 - Results of Nursery Sanitation Work on State and Privately-Owned
Lands in Northeastern States During Period 1930-1942, Inclusive
 (By States)

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Maine	Initial	206	103,516	22	163	.79	502.6
	Re-Erad.	1,529	10,819	-	300	.20	7.1
	Total	1,735	114,335	22	463	.27	65.9
N.H.	Initial	-	-	-	-	-	-
	Re-Erad.	2,762	7,824	1	283	.10	2.8
	Total	2,762	7,824	1	283	.10	2.8
Vt.	Initial	-	-	-	-	-	-
	Re-Erad.	2,230	4,839	75	409	.18	2.2
	Total	2,230	4,839	75	409	.18	2.2
Mass.	Initial	723	30,369	112	139	.19	42.2
	Re-Erad.	7,310	19,194	182	1,114	.15	2.7
	Total	8,033	49,563	294	1,253	.16	6.2
R.I.	Initial	1,780	160	565	167	.09	0.4
	Re-Erad.	18,156	4,786	184	277	.02	0.3
	Total	19,936	4,946	749	444	.02	0.3
Conn.	Initial	7,466	16,524	165	297	.04	2.2
	Re-Erad.	57,477	17,766	975	2,460	.04	0.3
	Total	64,943	34,290	1,140	2,757	.04	0.5
N.Y.	Initial	2,735	30,924	655	424	.11	8.5
	Re-Erad.	99,356	132,185	1,246	5,956	.06	1.3
	Total	103,091	163,109	1,901	6,380	.06	1.6
N.J.	Initial	795	2,000	114	109	.14	2.7
	Re-Erad.	870	765	-	18	.02	0.9
	Total	1,665	2,765	114	127	.08	1.7
Penn.	Initial	4,414	38,460	494	343 $\frac{1}{2}$	.08	8.8
	Re-Erad.	23,447	53,783	71	4,099 $\frac{1}{2}$	.17	2.3
	Total	27,861	92,243	565	4,443	.16	3.3
All States	Initial	19,119	221,953	2,127	1,642 $\frac{1}{2}$	.09	11.7
	Re-Erad.	213,137	251,961	2,734	14,916 $\frac{1}{2}$	.07	1.2
	Total	232,256	473,914	4,861	16,559	.07	2.1

No separate record was kept of the special nursery sanitation work prior to 1930, the results of such activities from 1918-1929, inclusive, being included in the regular Ribes eradication summaries.

Table 16 - Results of Nursery Sanitation Work on State and Privately-Owned Lands in Northeastern States During Period 1950-1962, Inclusive
(By Programs)

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild	Cult.		Man Days	Ribes
Regular Cooperative	Initial	16,799	189,652	1,943	1,290 $\frac{1}{2}$	.08	11.4
	Re-Erad.	139,095	179,170	2,504	7,728	.06	1.3
	Total	155,894	368,822	4,447	9,018 $\frac{1}{2}$	.06	2.4
P.W.A.	Initial	415	25,597	3	147	.35	61.7
	Re-Erad.	15,422	14,285	96	1,356	.09	0.9
	Total	15,837	39,882	99	1,503	.09	2.5
C.C.C.	Initial	280	232	47	33	.12	1.0
	Re-Erad.	11,592	45,509	14	3,699	.32	3.9
	Total	11,872	45,741	61	3,732	.31	3.9
W.P.A. (F.A.)	Initial	530	27	45	9	.01	0.1
	Re-Erad.	29,908	11,543	119	1,742	.06	0.4
	Total	30,438	11,570	164	1,751	.06	0.4
W.P.A. (State)	Initial	-	-	-	-	-	-
	Re-Erad.	4,117	492	-	300	.07	0.1
	Total	4,117	492	-	300	.07	0.1
S.C.S.	Initial	1,035	6,445	89	163	.16	6.3
	Re-Erad.	13,003	962	1	91 $\frac{1}{2}$	.01	0.1
	Total	14,038	7,407	90	254 $\frac{1}{2}$	.02	0.5
All Programs	Initial	19,119	221,953	2,127	1,642 $\frac{1}{2}$	.09	11.7
	Re-Erad.	213,137	251,961	2,734	14,916 $\frac{1}{2}$	.07	1.2
	Total	232,256	473,914	4,861	16,559	.07	2.1

Table 17 - Summary of Special Ribes Nigrum Elimination Work on State and Private Lands in Northeastern States During Period 1918-1942, Inclusive - By States

State	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Mass.	750,359	6,657	42,629*	432	43,061	7,347
R.I.	110,137	1,917	16,219	1,093	17,312	1,929
Conn.	318,344	32,695**	7,464	42,397	49,861	14,610
N.Y.	526,593	5,128	37,064	761	37,825	5,250
Totals	1,705,433	46,397	103,376	44,683	148,059	29,136

*Includes 556 bushes pulled in connection with special black current elimination project around nurseries in 1925 and 1926.

**The survey in Connecticut included all cultivated Ribes. It is estimated that the number of black current patches in that state did not exceed 1500.

Table 18 - Summary of Special Ribes Nigrum Elimination Work on State and Private Lands in Northeastern States During Period 1918-1942, Inclusive (By Programs)

Program	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Regular Cooperative	1,082,878	14,227	85,624	20,550	106,174	14,155
P.W.A.	6,157	39	7,486	-	7,486	375
W.P.A. (F.A.)	180,313	869	3,156	432	3,588	1,081
C.W.A.	195,750	5,404	-	-	-	1,850
E.R.A.	240,335	25,858	7,110	23,701	30,811	11,675
All Programs	1,705,433	46,397	103,376	44,683	148,059	29,136

C.W.A. project consisted of location work only.

Table 19 - Status of Ribes Nigrum Elimination Work in
Northeastern States - December 31, 1942

State	Years Work Performed	Total Number Townships in State	No. Townships Where Black Current Elimination Work	
			Completed	Partially Completed
Mass.	1930-1940, Incl.	355	346*	-
R. I.	1929-1933, Incl.	39	39	-
Conn.	1930-1935, Incl.	169	169	-
N.Y.	1928-1940, Incl.	996	236	39
Totals	-	1,559	790	39

*Nine additional townships on the islands adjacent to the mainland will not be worked.

In conjunction with the regular control activities in the other states, such bushes have been eradicated in the worked portions of the control areas. Few Ribes nigrum have been found in these latter states.

Table 20 - Summary of Blister Rust Canker Elimination Work on State and Privately-Owned Lands in Northeastern States During Period 1918-1942, Inclusive - By States *

State	Total Number Pines Examined	Number Infected Pines Cut Down	Number Infected Pines From Which Canker Removed	Number Cankers Removed		Total Man Days
				Branch	Stem	
Maine	95,202	7,945	12,089	13,032	1,862	711
N. H.	28,551	5,731	638	711	-	219
Vt.	267,593	40,749	21,369	24,736	448	3,071
Mass.	4,764,167	32,259	16,466	21,618	7	8,702
N. Y.	1,901,067	158,033	198,173	261,257	1,941	13,896
Penna.	919,478	32,595	129,975	566,925	1,974	7,305
Totals	7,976,088	277,315	378,710	893,329	6,232	33,865

Blister rust canker elimination work has also been conducted at Acadia National Park in Maine, the results of such activities being summarized on Page 92 of Section V of this report.

*Most of the work was performed on publicly-owned lands. The cost of such work on private lands was paid by the owners.

Table 21 - Summary of Blister Rust Canker Elimination Work
on State and Privately-Owned Lands in Northeastern States
During Period 1918-1942, Inclusive - By Programs

Program	Total Number Pines Examined	Number Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Number Cankers Removed		Total Man Days
				Branch	Stem	
Regular Cooperative	114,549	9,370	13,834	20,893	2,087	884
C.O.C.	567,018	28,308	76,048	458,455	67	4,564
W.P.A. (F.A.)	2,301,572	212,695	257,787	357,605	3,926	21,165
W.P.A. (State)	344,649	9,639	8,257	8,865	152	1,843
C.N.A.	4,648,000	17,303	12,784	17,511	-	5,409
Totals	7,976,088	277,315	378,710	893,329	6,232	33,865

Table 22 - Summary of Pine and Protection Zones Mapping Work on State and
Privately-Owned Lands in Northeastern States During
Period 1918-1942 Inclusive - By States

State	Total Acreage Reported Mapped	Acreage Detail Mapped in Net Control Area	Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Painted	Total Man Days
Maine	2,289,913	2,099,324	4,762,969	1,808 1/2	37,476
N.H.	1,475,327	1,433,688	259,702	-	40,788
Vt.	1,661,629	788,255	4,008,675	828	23,130
Mass.	953,060	828,483	1,182,157	1,290	20,706
R.I.	225,660	122,966	-	-	2,264
Conn.	728,888	494,476	2,611,319	3,202 1/4	25,168
N.Y.	4,277,942	1,949,681	2,867,199	2,399	43,782
Penna.	800,913	652,676	-	7,350	45,115
All States	12,413,332	8,369,549	15,692,021	16,877 3/4	238,429

The total acreage reported mapped includes a considerable acreage of wood-land spot-mapping in New York, while in Vermont a large acreage outside the net control area was also mapped. In all states the acreage reported mapped includes areas that have been remapped after it was determined that the original mapping was inaccurate.

Table 23 - Summary of Fines and Protection Work Done on State and Privately-Owned Lands in Northeastern States During Period 1918-1942, Inclusive - By Programs

Program	Total Acreage Reported Mapped	Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Fainted	Total Man Days
Regular Cooperative	514,931	634,674	"	2,620
C.C.C.	999,638	364,002	2,630	34,265
P.W.A.	744,663	942,528	227	6,915
W.P.A. (F.A.)	9,239,070	11,177,457	10,678 1/2	159,270
W.P.A. (State)	635,998	399,852	3,340 1/4	26,608
E.R.A.	213,971	2,139,370	"	4,205
C.W.A.	45,761	34,133	"	392
All Programs	12,413,332	15,692,021	16,877 3/4	232,420

State Compensation For Cultivated Ribes Destroyed During 1942

A total of 4,732 cultivated Ribes were destroyed in connection with control activities on state and privately-owned lands in the Northeastern States during 1942. No compensation was paid except in Pennsylvania where six owners were furnished nursery stock (other than Ribes) valued at \$5.60 by the state in reimbursement for 75 Ribes destroyed.

Table 24 - State Compensation Paid For Cultivated Ribes Destroyed in Connection With Control Projects on State and Privately-Owned Lands in Northeastern States During Period 1918-1942, Inclusive

State	Total No. Cultivated Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimbursement	Ave. Amount Paid For Bush
Maine	151,981	0	-	0	0	-
N. H.	158,820	2,008	1.3	63	\$550.60	\$.274
Vt.	17,930	1,846	9.2	133	792.91	.482
Mass.	325,635	42,074	12.9	673	15,020.15	.357
R. I.	41,758	1,410	3.4	58	509.79	.362
Conn.	90,650	175	0.2	16	103.50	.591
N. Y.	177,727	16,338	9.2	1,151	5,587.99	.342
N. J.	1,842	0	-	0	0	-
Penn.	54,810	457	0.8	65	164.05	.359
All States	1,021,183	64,108	6.3	2,159	\$22,728.99	.355

As indicated in Table 24, no compensation has been paid for the 151,981 cultivated Ribes destroyed in Maine during the period 1918-1942, inclusive.

No federal money has been paid for Ribes compensation.

In addition to the 1,021,183 cultivated bushes removed in connection with control activities on state and privately-owned lands, 115 cultivated Ribes have been destroyed on control projects on National Forest lands, while 293 such bushes were removed on the Acadia National Park project. No compensation was paid for cultivated bushes removed from the control areas on these federal land projects.

BLISTER RUST CONTROL WORK ON NATIONAL FOREST LANDS

There are two national forests in the Northeastern Region where blister rust control measures are being applied by the Forest Service in cooperation with the Bureau of Entomology and Plant Quarantine. With the possible exception of recent acquisitions, all important white pine areas on the White Mountain National Forest in New Hampshire and Maine have been given initial protection from blister rust and the majority of the areas have been reworked once in connection with control activities conducted under the Regular and C.C.C. Programs during the period 1924-1939, inclusive. Control work was started on the Allegheny National Forest in Pennsylvania in 1929 and was continued as a regular federal project during 1931, 1933 and 1942. C.C.C. crews were also used on Ribes eradication work on this forest during the period 1933-1936, inclusive, and in 1938.

Ribes Eradication Work on National Forest Lands During 1942

Control work during 1942 was restricted to the Allegheny National Forest where 254 acres on the Hearts Content area were reexamined for Ribes by a crew paid from regular Forest Service funds. A total of 1,698 wild Ribes were destroyed on the project which required 46 man days' labor at a cost of \$230.

Table 1 - Summary of Ribes Eradication Work on National Forests in Northeastern Region During Period 1924-1942, Inclusive

National Forest	Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
				Wild	Cult.		Man Days	Ribes
White Mountain	Regular	Initial	6,779	182,493	-	554	.08	66.3
		Re-Erad.	5,179	14,557	-	216	.04	2.8
		Total	11,958	197,050	-	770	.05	16.5
	C.C.C.	Initial	1,950	633,781	85	2,325	1.19	325.9
		Re-Erad.	3,799	309,521	-	1,700	.45	81.5
		Total	5,749	943,302	85	4,025	.70	164.1
	All	Initial	8,729	816,274	85	2,879	.33	93.5
		Re-Erad.	8,978	324,078	-	1,916	.21	16.1
		Total	17,707	1,140,352	85	4,795	.27	64.4
Allegheny	Regular	Initial	891	129,019	8	194	.22	144.8
		Re-Erad.	881	21,691	-	152	.17	24.5
		Total	1,772	150,710	8	346	.20	85.1
	C.C.C.	Initial	3,430	641,805	22	2,432	.70	183.9
		Re-Erad.	525	41,068	-	435	.83	78.2
		Total	4,015	682,873	22	2,867	.71	170.1
	All	Initial	4,381	770,824	30	2,626	.60	176.0
		Re-Erad.	1,406	62,759	-	587	.42	44.6
		Total	5,787	833,583	30	3,213	.56	144.0
All	Regular	Initial	7,670	311,512	8	748	.10	40.6
		Re-Erad.	6,060	36,248	-	368	.06	5.0
		Total	13,730	347,760	8	1,116	.03	25.3
	C.C.C.	Initial	5,440	1,275,585	107	4,757	.87	214.5
		Re-Erad.	4,324	350,589	-	2,135	.49	81.1
		Total	9,764	1,626,175	107	6,892	.71	166.6
	All	Initial	13,110	1,587,093	115	5,505	.42	157.9
		Re-Erad.	10,384	386,837	-	2,503	.24	37.3
		Total	23,494	1,973,935	115	8,008	.34	84.0

Table 2 -- Status of Ribes Eradication Work on National Forest Lands
In Northeastern Region - December 31, 1942

National Forest	Estimated Acreage of White Pine in Net Control Area	Total Acreage of Net Control Area*	Acreage Worked in Net Control Area			Acreage Not Yet Worked Initially
			Initial	All Rework	Total	
White Mountain	1,543	8,729	8,729	8,978	17,707	0
Allegheny	1,191	6,167	4,331	1,406	5,737	1,786
Totals	2,734	14,896	13,110	10,384	23,494	1,786

*White pine plus protection zones.

In addition to the 1,786 acres shown in Table 2 as still in need of initial control work on the Allegheny National Forest, it is estimated that protection measures will be required on approximately four thousand acres of the large tract acquired from the Wheeler-Dusenbury Lumber Company during the fiscal year 1943.

Plans for Control Work During Fiscal Years 1943 and 1944

An allotment of \$960 Forest Service funds has been approved for the employment of experienced scouts during May and June 1943 to prepare a detailed map showing the location of all areas on the White Mountain National Forest containing sufficient white pine to justify the cost of maintaining blister rust control measures. This map will show the location of the white pine areas and the boundaries of the protection zones. In addition, surveys will be made in the areas protected during the period 1924 to 1939, inclusive, to determine the need for reworking. It has been recommended that any necessary Ribes eradication work on the Forest be performed during the fiscal year 1944.

The Allegheny National Forest officials have submitted estimates for blister rust control activities involving expenditures of \$6,512.50 and \$9,509, respectively, during the fiscal years 1943 and 1944. Due to labor and transportation difficulties, only a limited amount of control work was performed during the calendar year 1942, and no Ribes eradication work is contemplated during the remainder of the fiscal year 1943.

Information for a key map showing the location of all white pine areas on the Allegheny National Forest will be obtained from the detailed timber survey maps of the Forest. In conducting the timber survey on the 14,000 acres to be acquired during the fiscal year 1943 from the Wheeler-Dusenbury Lumber Company, the Forest Service officials plan to obtain information on the location and amount of white pine and Ribes and the limits of the control areas. Consequently, special blister rust control mapping will not be necessary in this new tract.

Statement of Funds Expended - 1924 to 1942, Inclusive

<u>Source</u>	<u>White Mountain National Forest</u>	<u>Allegheny National Forest</u>	<u>Total</u>
Forest Service	\$2,583.36	\$1,009.77	\$3,593.13
Bureau of Plant Industry	75.63	207.85	283.48
State of N. H.	357.61	-	357.61
C.C.C.	8,096.47	4,984.02	13,080.49
Total	\$11,113.07	\$6,201.64	\$17,314.71

The costs for the control projects on the White Mountain and Allegheny National Forests do not include any charges for the supervisory activities of employees of the Forest Service, Bureau of Plant Industry and Bureau of Entomology and Plant Quarantine. The C.C.C. costs were computed on the basis of an arbitrary charge of \$1.00 per eight hour man day for the time the enlisted men spent on the project plus 35 cents per day for subsistence in 1933, 40 cents in 1934, and 50 cents during the period 1935-1939, inclusive. C.C.C. expenditures also include the actual cost of technical foremen assigned to the project and estimated cost of transportation for the entire C.C.C. personnel.

BLISTER RUST CONTROL ON NATIONAL PARKS - FINANCIAL PROJECT RLE-5

In the Northeastern Region, the National Park Service has been conducting blister rust control operations since 1929 at Acadia National Park located on Mount Desert Island, Maine. Under a cooperative agreement, our Bureau has provided general leadership and technical supervision for this control project. From a scenic and forestry viewpoint, white pine is of special importance at Acadia Park, as the general location of this tree species on the lower mountain slopes makes the pine prominently attractive. The beauty of many of the most scenic places on the park is due, to a large extent, to the fascinating pine growth in some unusual situation.

A survey during the fall of 1928 showed that blister rust infection was general throughout the white pine areas on Acadia National Park and that prompt application of control measures was necessary. During the period 1929-1932, inclusive, the National Park Service and the Bureau of Plant Industry cooperated by furnishing funds for control work, the latter agency being responsible for the necessary technical supervision. From 1933-1942, C.C.C. personnel from the two camps on Mount Desert Island were assigned to the control project. In 1941 and 1942, the National Park Service also allotted regular funds to employ two experienced scouts during the summer months to make systematic strip-line surveys of areas, where no Ribes eradication work had been performed for at least five years, to determine the need for Ribes re-eradication work.

Initial control work has now been completed on all present and prospective Acadia National Park areas, aggregating 20,716 acres, which contain sufficient white pine to justify the cost of Ribes eradication. In addition, 9,655 acres have been re-worked once. The 1941 and 1942 strip-line surveys showed that re-work is now needed on 1,643 acres, or only 11.6% of the 14,187 acres in the units surveyed. A total of 777.8 acres were actually examined for Ribes in connection with the 1941 and 1942 surveys which represents a 5.5% check. Similar surveys will be made during 1943 in other areas totalling 3,952 acres.

Several thousand valuable scenic white pines have been saved from destruction by blister rust as a result of the canker elimination work which was performed by Park Service employees in 1932 and by the C.C.C. personnel during the period 1933 to 1939, inclusive. However, such treatment is urgently needed in other areas along important roads and trails where the pines are heavily infected with blister rust, most of which originated prior to the application of control measures. If the canker removal work is delayed for even a few years in these areas it will not be possible to save many of the pines as the cankers will have developed to a stage where surgery work will not be effective. Follow-up work is also necessary in the areas treated since 1932 because, in spite of painstaking efforts, it is not possible to locate all blister rust infections when the original canker removal work is performed. At the present time, blister rust canker

elimination work is the most important phase of the control program at Acadia National Park since surveys indicate that the initial Ribes eradication work has been effective in establishing control of the rust and maintenance of control will not be a major problem as post checks show only a relatively small amount of Ribes regrowth in the control areas.

During 1942, two experienced blister rust scouts were employed by the National Park Service on a special post checking project, started in 1941, to determine the need for Ribes re-eradication work in areas where no control work had been performed for at least during the past five years. The results of such post checking activities have been summarized in a special report. One C.C.C. crew was also assigned to Ribes eradication work for a few days during June to complete a small area of approximately 48 acres, in the vicinity of Dry Mountain, which was still in need of initial protection. A small amount of re-eradication in another area was also performed by the C.C.C. personnel. In addition, one area of 228 acres was systematically examined for Ribes by the two checkers assisted by one of the park rangers. This latter work was done in order to ascertain if the data obtained on the post checking project were representative of actual Ribes conditions. An average of 0.9 Ribes with 1.6 feet of live stem per acre and two seedlings were found on the 1941 post checks in this area. On the 1942 crew work an average of only 0.12 feet of live stem per acre was found.

Table 1 - Summary of Ribes Eradication Work on Acadia National Park - 1942

Program	Type of Work	No. Acres Worked	No. Ribes Destroyed (all wild)	No. 8-Hour Man Days	Per Acre	
					Man Days	Ribes
Regular	All Re-Erad.	228	34	20	.09	0.1
C.C.C.	Initial	48	510	9	.19	10.6
	Re-Erad.	20	0	2	.10	0
	Total	68	510	11	.16	7.5
All	Initial	48	510	9	.19	10.6
	Re-Erad.	248	34	22	.09	0.1
	Total	296	544	31	.10	1.8

Table 2 - Summary of Ribes Eradication Work on Acadia National Park - 1929 to 1942

Program	Type of Work	No. Acres Worked	No. Ribes Destroyed		No. 8-Hour Men Days	Per Acre	
			Wild	Cult.		Men Days	Men Days
Regular	Initial	7.726	503,920	-	2,798	.35	65.0
	Re-Erad.	228	54	-	20	.09	0.1
	Total	7,954	503,954	-	2,818	.35	65.1
C.C.C.	Initial	12,990	389,727	293	3,429	.65	30.0
	Re-Erad.	9,427	35,191	-	3,564	.38	1.7
	Total	22,417	424,918	293	11,993	.53	15.0
All	Initial	20,716	893,647	293	11,227	.54	45.2
	Re-Erad.	9,655	35,225	-	3,584	.37	1.0
	Total	30,371	928,872	293	14,811	.49	10.5

Table 3 - Summary of Blister Rust Canker Elimination Work on Acadia National Park
(1932 to 1939, Inclusive)

Program	Total No. Pines Examined	No. Infected Pines Cut Down	No. Infected Pines From Which Cankers Removed	No. Cankers Removed		No. 8-Hour Men Days
				Branch	Stem	
Regular	2,546	319	715	1,480	61	100
C.C.C.	58,261	2,957	6,679	27,054	2,691	2,177
All	60,807	3,276	9,594	28,534	2,752	2,277

Statement of Funds Expended

Source	Calendar Year 1942	1929-1942, Incl.
National Park Service.....	\$1,174.50	\$11,479.94
Bureau of Plant Industry.....	0	3,145.83
C.C.C.	16.50	29,880.36
Total.....	\$1,191.00	\$44,506.13

The costs for the control project at Acadia National Park do not include any charges for the supervisory activities of employees of the Bureau of Plant Industry or Bureau of Entomology and Plant Quarantine. The C.C.C. costs were computed on the basis of an arbitrary charge of \$1.00 per eight-hour day for the time the enlisted men spent on the project plus 35 cents per day for subsistence in 1933, 40 cents in 1934, and 50 cents during the period 1935-1942, inclusive. C.C.C. expenditures also include the actual cost of technical foremen and checkers assigned to the project and estimated cost of transportation for the entire C.C.C. personnel.

Blister Rust Control Work on Recreational Demonstration Areas

There are several recreational demonstration areas in the Northeastern States under the jurisdiction of the National Park Service which contain sufficient white pine to justify blister rust control measures. Necessary Ribes eradication work was performed on most of these tracts in connection with the regular cooperative program before the areas were acquired by the Federal Government. During 1941 an attempt was made to compile a record of all work performed on these recreational demonstration areas but in most instances it was not possible to segregate the Ribes, man hours and cost data for the work on federal lands. Consequently, these data are included under "State and Private Lands" in our records of control work in this Region.

According to present plans the Hickory Run recreational area, comprising 12,965 acres located in Carbon County, Pennsylvania will be continued indefinitely under the jurisdiction of the National Park Service. All of the other recreational areas in the Northeastern States will probably be transferred to the States concerned. During 1937, 1938 and 1939 the National Park Service conducted Ribes eradication work on 4500 acres in the Hickory Run area with funds from ERA appropriations. Table 4 summarizes the results of this control work by years.

Table 4 - Summary of Ribes Eradication Work
on Hickory Run Recreational Area, Pennsylvania
(All Initial Control Work)

Year	Acreage Worked	No. Ribes Destroyed	Total Man Days	Total Cost (All ERA Funds)
1937	500	15,000	149	\$800.10
1938	3,000	45,000	715	2,998.59
1939	1,000	15,000	454	1,799.39
Totals	4,500	75,000	1,318	\$5,598.08

During the fall of 1941, State Blister Rust Control Leader Fatzinger, of Pennsylvania, examined a part of the control areas at Hickory Run to determine the need for any additional Ribes eradication work. Based on his observations, there are several small areas which should be given protection. A special report of Mr. Fatzinger's observations was submitted to the Park Service officials. A survey should be completed of the entire control area as soon as possible in order to determine the amount of initial work required and the need for reworking the portions already protected.

PART VI

STUDIES MADE IN NORTHEASTERN STATES DURING 1942
OF BLISTER RUST DAMAGE TO WHITE PINE, PINE AND RIBES REGENERATION,
EXPERIMENTAL CANKER ELIMINATION AND SPREAD OF BLISTER RUST TO PINES

P. L. Rusden, Agent, Plant Disease Control

No new lines of blister rust field investigations were opened in this region during 1942 because of the war. Travel by automobile was sharply curtailed and the supply of labor for assistance in field studies was very limited. It was possible, however, to continue observations so as to bring up to date all of the field studies already under way and a special effort was made to prepare progress reports up to 1942 because the man in charge of field investigations expected to be called into military service at any time.

The present writing is a brief recapitulation of the studies being conducted now with a statement of purpose, a summary of basic data, and a review of the status of each line of investigation with the tentative conclusions reached and any recommendations for or against continuation of the work.

I. Study of Blister Rust Damage to Merchantable Pine at Fort Knox, Prospect, Maine, March, 1942.

The purpose of this study was to secure additional data in support of the statement that blister rust damage to merchantable sized white pines in the Northeastern States can result in serious economic loss.

The pine area examined was located at Fort Knox, Prospect, Maine, in the coastal fog belt and consisted of 4 to 5 acres of merchantable pine timber surrounded by spruce. A report to the effect that heavy blister rust infection was evident on the pines came from State Forest Commissioner Rendall and Professor Ashman of the University of Maine, and was verified by district blister rust control leader H. G. Bradbury who later assisted in making this study.

Pine infection data were recorded on 2.5 acres of 1/4 acre plots and provide a valuable addition to the accumulation of statistical information regarding blister rust damage. The results of the study are summarized as follows:

General Summary of White Pine Over 6" DBH
On 2.5 Acres - Numbers of Trees and
Board Feet Content by Condition of Health

<u>Condition</u>	<u>Number</u>	<u>Percent</u>	<u>Board Feet</u>	<u>Percent</u>
Healthy	98	18.8	8,125	14.6
Branch Cankers Only	23	4.4	3,245	5.8
Live Stem Cankers	245	46.9	32,855	59.0
Tops Killed	40	7.7	4,441	8.0
Tree Killed by Rust	116	22.2	6,992	12.6
Totals	522	100.0	55,661	100.0
"Damaged" Trees	401	76.8	44,258	79.6

Blister rust infection was very evenly distributed throughout this stand of pine. The stem cankers were mostly found at some distance from the ground since the trees were all fairly large when they became infected. Blister rust inoculum (sporidia) was probably spread to these trees from about 15,000 mixed Ribes hirtellum and R. glandulosum removed from within or near the pine stand by Ribes eradication crews in 1936.

The distribution of pine timber volume by tree diameter classes shows 62.7% of the total volume in trees over 10" DBH. Most of the potential or actual damage (trees alive with stem cankers or killed by blister rust) was found in the large, vigorous timber trees.

No further field work is needed for this demonstration of heavy (50%) blister rust damage to merchantable pines. The purpose of the study is accomplished when the data are used in conjunction with other figures from studies of blister rust damage to large pines at Kittery Point, Me., Waterford, Vt., Littleton, N.H., Upper Lake, N.Y. and other pine infection areas.

II. A Roadside Demonstration of Blister Rust Damage To Pine At Belfast, Maine.
1936 & 1942

This study consisted of the reexamination of 365 white pines in a roadside demonstration area near Belfast, Maine. It was intended to bring up to date the statistical information derived from this stand of pine in 1936 when district leader H. G. Bradbury prepared the area as a public demonstration of blister rust damage. The lack of height data in the 1936 record made it impossible to show the effect of blister rust on the board-feet content of the stand.

A general summary of the volume data for the 261 pines over 6" DBH (on 2.2 acres) shows the distribution of trees according to their condition of health in 1942 as follows:

Number of Pines and Board-Foot Volume
By Condition Groups

<u>Condition</u>	<u>Pines over 6" DBH</u>		<u>Volume</u>	
	<u>No.</u>	<u>Percent</u>	<u>Board Feet</u>	<u>Percent</u>
Healthy	4	1.5	423	1.5
Branch Cankers Only	134	51.4	16,006	58.2
Live Stem Cankers	83	33.7	9,455	34.4
Tops Killed	6	2.3	456	1.6
Tree Killed by Rust	29	11.1	1,177	4.3
Totals	261	100.0	27,517	100.0

This Belfast area, since it is located along a well-travelled highway, provides for the public an excellent demonstration of blister rust damage. The quality of the timber and the pine stocking are too low to make the volume data of 12,508 BF per acre commercially significant. The site has been kept clear of brush while signs, tags and paint symbols have been used liberally to draw the attention of the public to the blister rust cankers. The high proportion of trees with branch-cankers-only and the relatively small proportion of trees killed by blister rust are due largely to the death of many infected branches before the blister rust fungus could reach the trunks of the pines. The situation is unusual. With pines of better quality growing rapidly on a more favorable site the branch infections failing to reach the trunks of the trees would seldom be more than 10% of the total of such cankers.

No further field work is contemplated on the Belfast area although it will be maintained as a demonstration for the public with the signs, tags, etc. renewed from time to time as needed.

III. Pines and Ribes in Relation to Silvicultural Treatments of Sample Areas Within
The Charles Lathrop Pack Memorial Forest, Warrensburg, N.Y. 1935-1942

The study was begun early in the fall of 1935 in order to take advantage of the very favorable situation at the Pack Forest, Warrensburg, N.Y. where it was possible to establish a series of sample plots in compartments of a well-organized experimental forest in which the New York State College of Forestry is working out various silvicultural techniques for the improvement of timber stands. In 1935 a short series of 6 plots was made in each of half a dozen differently treated pine compartments. During the summer of 1942 this series of plots was

expanded by replication and by plot sub-divisions in lieu of replication until there were 22 plots or sub-plots for the study of Ribes and pine in relation to blister rust control within the limits of Pack Forest. Data secured in the years 1938 to 1941 inclusive were re-allocated to the new series of plots and it is now planned to have all future observations made on the 22-plot series.

Because the change from 6 to 22 plots was just made last year (1942) it is not yet possible to draw any conclusions from the new series of plots. The earlier series of 6 samples (1938-1941) had begun to show that a certain restraint in silvicultural thinnings is vital to the suppression of wild Ribes in the eastern Adirondack region and that clear cutting is the most dangerous practice with regard to promoting the regeneration of such bushes. At the beginning of 1942 the following tentative conclusions, based on observations of 6 areas, were drawn:

- 1) Duff disturbance is important to the establishment of new Ribes from seed present on favorable sites.
- 2) Canopy removal is essential to speed the growth of established Ribes in a forest.
- 3) Ribes may be suppressed more readily by ground cover of young evergreens than by deciduous ground cover.
- 4) Established Ribes develop much more rapidly than new bushes from seed when they are favored by forest canopy removal.
- 5) There is a measurable difference in the growth of Ribes under the various silvicultural treatments being tried.
- 6) The concept of Ribes live stem as a "cumulative" source of blister rust inoculum may be worth examining to help in an interpretation of the development and spread of blister rust in a stand of pine.

For the present it is not possible to assign much weight to these tentative conclusions. The basic live stem per acre data for the new series of Pack Forest plots is as follows:

General Summary of Jack Forest
Riparian Reclamation Data 1938 to 1942 Inclusive

		Ribes Live Stem Per Acre					Treatment of Sites on Which Plots Are Located	
Plot No.	Ribes Spe- cies	1938	1939	1940	1941	1942	Plot Acre- age	
1-A	G	4.0	13.2	17.6	13.2	18.0	.250	) 25% selective cut in pure pine.
	S	1.6	9.2	11.2	7.2	8.0		
	Both	5.6	22.4	28.8	20.4	26.0		
1-B	G	.4	6.0	17.6	39.6	82.8	.250)
2	-	-	-	-	-	-	.250	Clear-cut old growth pine.
3-A	G	203.2	392.0	252.8	359.2	339.2	.125)
	S	697.6	1417.6	807.2	1121.6	648.8		) Shelter wood strip cut in
	Both	900.8	1809.6	1060.0	1480.8	988.0		) maturing pure pine with
3-B	-	-	-	-	-	-	.125	) heavy seeding-in.
3-C	G	80.0	160.0	284.0	412.8	551.2	.125)
3-D	G	218.4	321.6	228.8	205.6	155.2	.125)
4-A	G	5.2	33.6	65.2	104.8	105.2	.250)
	S	4.0	38.0	12.0	56.4	68.0		) Girdled poor white pine under-
	Both	9.2	70.4	77.2	121.2	173.2		) planted to Red Pine.
4-B	-	-	-	-	-	-	.250)
4-C	G	26.0	38.8	60.0	55.2	34.4	.250)
5-A	G	74.4	172.1	310.7	422.0	508.1	.430)
5-B	G	30.2	69.3	132.8	130.7	149.5	.430	) Clear-cut pure white pine
5-C	G	62.6	142.1	223.7	251.8	243.7	.430	) wolf trees girdled and standing
	S	.7	.7	.7	.5	-		) young trees and seedlings
	Both	63.3	142.8	224.4	252.3	243.7		) showing up fairly well.
6-A	G	82.4	182.4	406.8	412.0	502.0	.250)
	S	12.4	31.6	60.0	50.0	72.6		) Clear-cut hardwood becoming
	Both	94.8	214.0	466.8	462.0	581.6		) dense coppice with some
6-B	-	-	-	-	-	-	.250	) planted ash.
8-A	-	-	-	-	-	-	.250	) Girdled poor quality white pine
8-B	G	4.0	8.0	16.0	24.0	44.0	.250	) underplanted with Red Pine.
9-A	G	-	1.2	5.2	14.4	32.4	.250	) Regenerating mixed pine on
9-B	G	-	1.2	11.2	31.6	56.8	.250	) old cut-over.
10-A	G	-	1.2	3.2	3.2	12.4	.250)
	S	-	-	2.0	5.2	8.0		) 50% thinning in mixed
	Both	-	1.2	5.2	12.8	20.4		) pine and hardwood.
10-B	G	-	2.0	4.0	6.0	12.0	.250)
	S	-	-	2.0	4.4	8.0)
	Both	-	2.0	6.0	10.4	20.0)
11	G	12.0	28.0	69.2	152.4	269.2	.250	Clear-cut hardwood (See 6-A & 6-B)
Av.	G	30.3	63.7	99.6	121.6	146.2	5.540	
Av.	S	16.6	35.6	22.2	30.8	22.4	5.540	
Av.	Both	46.9	99.3	121.8	152.4	168.6	5.540	

Note G = Gooseberries
S = Spunk Currants

Further observations should be made on these plots and where possible a study of blister rust infections of pines on these study areas should be correlated with the Ribes data. It may be desirable to keep these Pack Forest plots in "active status" for a number of years in order to get the most out of them, provided, of course, that the Director of the forest, Clifford Foster, does not object to the presence of the Ribes.

IV. The Spread of Blister Rust Infection From a Single Ribes Rotundifolium Bush at Pack Forest, Warrensburg, N. Y.
1941 & 1942

Using a single Ribes rotundifolium bush as a center, a circular plot with 7 concentric zones each 6 feet in width was laid out in one compartment of the Pack Forest, Warrensburg, N. Y. This compartment in which the plot was established supported a dense population of very young pine 1 to 6 feet high following a shelter wood cutting of the mature overstory. The bush located at the center of the circle is believed to have been responsible for practically all of the blister rust infections occurring on the pines within the plot boundary. Individual pines were plotted on a sketch-map of the area and their condition of health noted in 1941 and again in 1942 in order to show the influence of the R. rotundifolium bush in spreading the rust. To limit the observed blister rust cankers as far as possible to sporidia produced by the one bush used as a plot hub the bush was killed with salt and borax in June of 1942. Any cankers on wood formed later than 1941 can scarcely be attributed to sporidia from this particular bush.

A brief summary of the pine infection data by zones away from the center of the circle is given in the following table. Each zone is 6 feet wide and the cumulative data are presented to show the general effect of spreading the sporidia in all directions from the center. Most of the infection was found in a segment from a line NW to a line NE of the center of the plot.

Pine Infection Data By Zones of a
Circular Plot With a Single Ribes Rotundifolium
Bush at the Center 1941 & 1942

Con- cen- tric Zone No.	Total Pines		Infected Pines				Total		Dis- tance from Hub	Percent Trees Infected		Percent of Cumulative Total Inf. Pines	
			Live		Killed					1941	1942	1941	1942
	1941	1942	41	42	41	42	41	42		1941	1942	1941	1942
1	17	21	10	11	2	6	12	17	6'	70.6	81.0	70.6	81.0
2	46	46	8	14	2	2	10	16	12'	21.7	34.8	35.0	49.2
3	66	66	6	4	1	2	7	6	18'	10.6	9.1	22.4	29.3
4	48	49	2	1	1	-	3	1	24'	6.3	2.0	18.0	22.0
5	59	77	2	1	1	-	3	1	30'	5.1	1.3	15.7	15.8
6	78	96	1	2	1	1	2	3	36'	2.6	3.1	11.8	12.4
7	120	171	1	3	-	1	1	4	42'	.8	2.3	8.8	9.1
All	434	526	30	36	8	12	38	48	45'	8.8	9.1	-	-

The pine seedlings were counted stem by stem in 1941; however, they were neither tagged nor marked in the field, hence some variation in the totals could be expected in 1942. It appears that 4 infected trees disappeared from zones 4 & 5, also one tree in zone 3. Such complications are not unusual in dealing with pine seedlings on areas subject to heavy winter snows, frost, ice and high winds. A general increase of pine infection is noted with the percentages of trees infected varying in inverse proportion to the distance from the source of blister rust inoculum, the Ribes bush at the center of the plot. After a few more years it should be possible to determine practically all of the blister rust infections within the plot that might have come from the bush at the center. The data for this R. rotundifolium bush are as follows:

(Approximate age of bush 10 years in 1941)

	<u>1941 (Sept.)</u>	<u>1942 (June)</u>
Height	3.3'	3.2'
FLS	43.0'	65.4'
No. Leaves	900	2500
No. Fruit	None	350

Not all individual cankers could be found and positively identified on such small pines at least within a reasonable length of time. The following is a summary of the cankers that were identified, by zones, according to the year wood on which they originated:

Identifiable Blister Rust Cankers Found on
Pine Seedlings Within a 42' Circular Plot
1941 & 1942 -

Zone	1		2		3		4		5		6		7		All	
Year of Origin	1941 Data	1942 Data	41	42	41	42	41	42	41	42	41	42	41	42	1941 Data	1942 Data
1937	2	6	1	2	-	1	-	-	2	-	1	2	-	-	6	11
1938	17	5	9	11	9	2	2	1	1	1	1	-	1	2	40	22
1939	1	3	1	5	1	1	1	-	-	-	-	-	-	-	4	9
1940	-	-	-	4	-	-	-	-	-	-	-	-	-	1	-	5
All	20	14	11	22	10	4	3	1	3	1	2	2	1	3	50	47

These canker counts for 1941 and 1942 illustrate the fact that it is difficult if not impossible to keep track of cankers on small trees from one year to the next unless individual markings are used on such infections. Whole trees or individual cankers disappear and the continuity of the record is spoiled even by the losses that may take place during a single winter. The fact remains, however, that these trees did not apparently get much blister rust infection until the Ribes bush was at least 4-5 years old. How many very small pine seedlings were lost before 1941 we have no way of knowing; however, the 8 trees killed by rust that were found on the plot in 1941 were all in their original places. No very far-reaching conclusions are yet justified from the data secured on this circular plot. It does seem evident that blister rust infection may occur with a frequency that is in approximately inverse proportion to the distance of the trees from the source of inoculum. This would tend to substantiate the conclusion that it is seldom necessary to search for the source of blister rust infection at any great distance from diseased trees, at least where wild Ribes are concerned. The

blister rust spores (sporidia) from a single rather small Ribes bush can make appreciable inroads into very young pine becoming established in the immediate vicinity. The longer such a bush remains the more likely it is to kill a large number of seedling pines. Eventually, however, a single bush, such as this one, would be screened or even shaded out by the continued growth of some of the very pines that become infected. The trees succumb to the rust very quickly when they are small, but they soon reach a size where they are killed much more slowly. Four or five-inch trees, 15 feet tall but with active basal cankers are not rare phenomena. At least two more sets of observations should be made on this circular plot before speculating farther with regard to the fate of pines under similar conditions. It would be of considerable interest to the blister rust control organization to have further studies made along the lines of this investigation, if it is feasible to set up plots of vigorous Ribes of good size at known distances from stands of pine of different ages. So far, in the Northeast, we have not done very much about setting up experimental plots of this type for a number of reasons.

V. Experimental Treatment of Blister Rust Stem Cankers in New England and New York, 1941 & 1942

No new treatments of pines with stem cankers were tried during 1942 in the Northeastern States. Observations were made on the trees treated at Warrensburg, N. Y., Bath & Woodsville (Brier Hill), N. H., and at Norway, Me. but there was an insufficient lapse of time since the original treatments for any definite conclusions to be drawn. Trees treated in Saratoga Co., N. Y. were lost when the owner had them cut down.

No new trees were treated principally because the field investigators were more concerned with completing observations on the pine and Ribes regeneration studies on the Pack Forest and on the New England Hurricane Zone.

It is not anticipated that further experimentation in the treatment of pines infected with blister rust will be attempted for the duration of the war. At present it seems that no means of determining the absolute limits of blister rust infection in the trunk of a pine has been discovered. We shall continue to have failures of treated stem cankers and to waste time trying to treat cankers that have progressed too far until we find some indicator of the spread of *Grematium ribicola* mycelium within the inner bark. We can secure favorable results in a great many cases by using Martin & Gravatt's revised bulletin "Treatment of White Pines Infected with Blister Rust", the best technical publication touching on this subject. Some further work on the experimental treatment of blister rust cankers may be carried on even during the war by Mr. Offord in the West.

VI. Regeneration of Ribes and Pine Following the New England
Hurricane of 1938.
1939-1942

In 1939 a series of 100, 1/8th-acre plots was established in four New England states along the path of the 1938 Hurricane in order to study the reproduction and regeneration of pine and Ribes and to observe changes wrought by the violent disturbance to the forest types and to the forest floor.

Ribes bushes were staked and numbered on these plots so that fresh data could be recorded each year. The pines within the plot limits were carefully examined and tallied but without the individual trees being marked in the field. The summary of Ribes data herewith presented shows that Ribes bushes have appeared on 35 of the 100 plots. Only 7 of the Ribes sites, however, appear to have bushes large enough to produce appreciable quantities of blister rust inoculum (sporidia). The study as a whole has not yet progressed to a point where any conclusions are justified although certain trends are apparent to which attention might be drawn at the present time.

In this, as in similar studies of Ribes growth, bush tallies have proved virtually useless to indicate volume of Ribes live stem. After 5 seasons, no individual bushes with more than 50 feet of live stem have developed. No plots on which Ribes have once appeared have as yet become devoid of bushes again, i.e. Ribes are persistent. Ribes appear sensitive to drought in inverse ratio to their size. The decreasing numbers of new bushes (from seed) during the 5-year period may indicate that few viable seed remain in the duff or that environmental conditions for seed germination have become increasingly unfavorable. No Ribes have been found on the undersides of upturned stumps to corroborate A. E. Fivaz's New York observations made a number of years ago.

The four years during which these studies have been carried on in New England have had short, dry, cool growing seasons unfavorable to the growth of most woody or herbaceous plants. For this reason the studies should be carried on for a long enough time to embrace the same number of years of normal rainfall, higher temperatures, etc.

Ground water, near the surface, appears to be very important to the growth of New England Ribes bushes. The production of live stem on wet sites was 15 times greater than on dry sites where bushes were found. Most of the dry sites had no Ribes.

Pine seedling counts, by years of origin, show that pine is seeding in slowly on most of the hurricane areas that were formerly covered with pine forest. The slowness of the re-seeding is due largely to the loss of trees

of seed-bearing ages. Hardwoods appear to be seeding in even more slowly than the pines.

No blister rust infections have yet been seen on these post-hurricane pines; therefore, the studies should be continued until it is possible to correlate Ribes and pine regeneration with blister rust canker data. We do not yet know how long it may take for the Ribes to become a serious threat to the pines.

By 1942 there were 617 post-hurricane pines per acre on the general average of plots where Ribes were found. There was, however, a considerable range of pine stocking and the appearance of so many trees per acre on the average acre was due in part to heavy stocking in a few cases. This same condition was found on the non-Ribes plots where there were on an average 733 post-hurricane pines per acre. The difference in average stocking between Ribes and non-Ribes bearing pine sites is not necessarily significant at this early date. Since the oldest post-hurricane pines could only have been growing for 5 years the stocking figures indicate that these areas are, on the whole, somewhat understocked with pine even though the pre-hurricane small trees still standing help to raise the average for all plots up to about 1200 trees per acre. On many of these sites the outlook seems good for adequate pine re-stocking in spite of the very serious loss of seed-bearing trees.

The following is a general summary of the basic Ribes data from these post-hurricane plots including field estimates of data for the year 1938; all observed species have been lumped together; however, there is a fairly equal representation of gooseberries and skunk currants on the plots with only a few scattered wild red currants apart from these.

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Of the six studies included in this brief write-up the first two, studies of blister rust damage to pine at Fort Knox and at Belfast, Mo. may be considered closed. The other four should be continued for a varying number of years, depending upon the trend in the results.

Because of the war, these studies may have to be interrupted. There will be no great loss of information in the long run if no data were taken during 1943 and only minor losses of statistical material would be anticipated even from a three-year gap in the pine and Ribes growth or regeneration data. It is recommended that for the next year, at least, these field studies be set aside.

Number of Ribes Bushes and FLS For All
Hurricane Plots on Which Ribes Occurred
(Data for 1938 are Field Estimates)

Year	1938		1939		1940		1941		1942	
Plot No.	Ribes	FLS	Ribes	FLS	Ribes	FLS	Ribes	FLS	Ribes	FLS
4-B	-	-	1	.5	1	1.0	1	2.5	1	4.6
4-D	1	.5	1	1.0	1	2.5	2	15.5	2	19.9
7-C	-	-	-	-	1	.3	1	1.0	1	4.5
9-B	-	-	-	-	-	-	1	.5	1	1.1
9-C	3	21.5	3	35.0	3	50.0	3	51.2	3	61.6
9-D	1	1.0	1	2.0	2	3.4	2	5.1	2	6.9
10-A	19	14.7	33	36.4	36	106.8	21	89.7	17	140.9
10-B	20	15.4	23	33.0	22	100.5	22	93.7	20	88.4
10-C	15	8.5	16	20.1	17	70.1	7	15.3	5	15.9
10-D	7	5.0	8	10.5	8	23.5	5	37.7	5	92.2
12-A	3	4.5	10	9.8	12	13.6	12	16.9	13	20.9
12-C	-	-	2	.8	3	1.9	3	2.8	3	6.4
14-A	-	-	-	-	2	.6	1	.9	1	.6
14-D	1	2.5	2	7.3	2	13.0	2	15.2	2	14.5
15-B	1	2.0	2	5.1	2	12.6	3	8.4	3	14.2
15-D	1	1.0	1	2.5	1	4.5	1	26.0	1	43.0
16-D	1	1.0	2	2.5	2	3.5	2	7.0	2	6.5
17-C	-	-	-	-	-	-	2	.9	1	.5
17-D	-	-	1	.5	1	1.0	2	1.8	1	1.9
20-B	27	34.9	43	79.0	60	149.4	53	187.8	47	287.8
20-W	3	25.5	5	41.6	8	59.6	8	84.7	5	53.5
21-1	17	11.5	29	33.4	31	66.1	31	71.9	31	178.0
21-3	6	15.0	7	30.5	7	45.5	7	64.0	7	234.0
22-B	17	26.2	28	58.9	60	132.7	68	239.8	60	364.5
22-D	7	12.5	8	27.7	16	60.0	23	95.3	20	162.3
23-A	6	5.0	12	14.3	14	30.2	26	44.5	23	59.6
23-B	1	1.0	1	2.0	2	4.2	2	6.0	1	1.9
23-C	1	2.0	1	4.0	1	9.0	1	9.5	1	17.5
23-D	-	-	-	-	-	-	1	.5	1	.2
24-A	-	-	-	-	3	.9	3	2.1	2	3.3
24-B	-	-	-	-	-	-	-	-	1	.1
25-A	1	.5	3	2.5	3	7.0	3	15.5	3	44.4
25-B	-	-	2	1.0	4	3.0	4	6.0	4	12.2
25-D	1	.5	3	2.0	3	4.5	3	12.0	3	24.0
26-B	-	-	1	.5	1	1.0	1	3.0	1	6.3
Totals	160	212.2	249	464.6	329	982.9	327	1234.7	294	1994.1

No. Plots 23 28 31 34 35

Other plots in the series (1A to 26D) have had no Ribes on them to date.

ANNUAL REPORT

ON

WHITE PINE BLISTER RUST CONTROL

SOUTHERN APPALACHIAN STATES

1942

By Roy G. Pierce,

Pathologist in Charge,

June 7, 1943.

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BLISTER RUST CONTROL IN THE SOUTHERN
APPALACHIAN STATES FOR CALENDAR
YEAR - 1942

I.

INTRODUCTION

The following report covers all phases of blister rust control in the Southern Appalachian States for the calendar year 1942, with cumulative statistical data on accomplishments from 1918 to 1942 inclusive.

The first part of the report will be presented on the basis of Financial and Work Projects. This will be followed by a narrative section and statistics on the basis of ownership, and lastly there will be shown miscellaneous section, not properly in the purview of the first two sections.

II. Work Project B. L. R. 1-2 Leadership, Coordination and Technical
Direction of White Pine Blister Rust in the Region

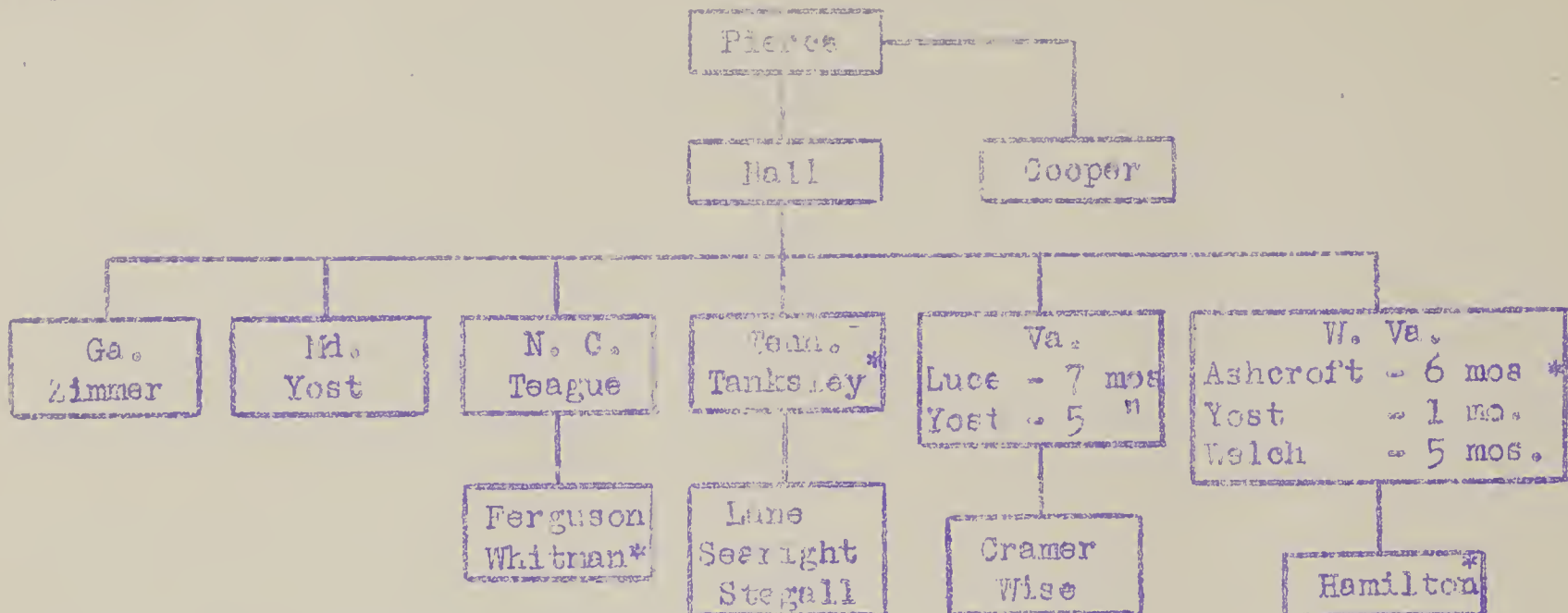
The Bureau has divided the work of the Division of Plant Disease Control into two projects of which B. L. R. 1-2, represents the administration of the blister rust control work in the Southern Appalachian States.

C.

Organization

The regional office included Roy C. Pierce, Pathologist-in-Charge; J. Curtis Ball, Associate Forester and Assistant Regional Director; H. K. Cooper, Jr., Administrative Assistant; Edward T. Hooper, Draftsman, and two clerk stenographers. A blister rust control organization was maintained throughout the year in Georgia, North Carolina, Tennessee, Virginia and West Virginia, and for the first half year in Maryland with a State leader in charge. Work ceased in Maryland for the year on June 30, 1942, owing to the reluctance of the State of Maryland to provide funds for cooperating with the Federal Government. In Kentucky scouting for the rust was carried on by Mr. F. E. Yost from September 7 to September 14, 1942. Initial surveys and eradication were completed in Kentucky in 1934, and only periodic inspections have been considered necessary since that time, on account of the almost complete freedom of the white pine sites from wild ribes, and the absence of the blister rust in the State. In the field, only E. E. Yost, State leader of Virginia, formerly in Maryland and West Virginia was employed full time on this project (3101). The other State leaders were employed on this project for various number of months, J. M. Ashcroft, West Virginia, three months out of six; J. G. Luce, Jr. of Virginia, one month out of six; R. D. Tanksley of Tennessee, eleven months out of twelve; H. B. Teague of North Carolina, six months out of twelve; W. V. Zimmer of Georgia, three months out of twelve; George C. Hamilton, Agent of West Virginia was employed six and one half months out of twelve, George C. Cramer of Virginia two and one-half months out of twelve and Mark Ferguson of North Carolina 0.33 months out of 6.75 months.

The organization employed under this project is shown in the accompanying diagram.



* Partly paid from Cooperative Funds.

CHANGES IN PERSONNEL

In North Carolina Agent Mark M. Ferguson, who had worked intermittently since May 12, 1936 was dropped from the rolls August 8, 1942 because of closing of State W. P. A. Project.

In Tennessee, Agent J. Wilburn Leco, first under appointment May 25, 1936, resigned from the Bureau on April 20, 1942 to engage in war production. He is now in the Army. Walter A. Stegall, who had been an agent since May 7, 1934, left our work to join the Army on July 18, 1942. He was being paid by State W. P. A. in 1942.

In Virginia, Mrs. Minnie C. Hudgins, Assistant Clerk-Stenographer, who entered Government service in the Richmond Office December 21, 1935, was furloughed September 14, 1942 to join the Women's Army Auxiliary Corps, in which, after a period of training, she became a Lieutenant.

Mr. John H. Wise held a brief appointment as Checker and Agent in Virginia from April 20, 1942 to October 31, 1942 with an interim in July. He worked in the Shenandoah National Park and in the George Washington National Forest.

Mrs. Hudgins was the only one of the above five who held a secretarial appointment.

IX D Work Performed

General supervision was given the field work by the Richmond Office both through correspondence and through direct contact in the field with State leaders and agents. Some personnel problems were handled involving changes in State leaders in Virginia and West Virginia, Mr. Yost replacing Mr. Luce in Virginia and Mr. Yost for one month and Mr. Welch for five months replacing Dr. Ashcroft in West Virginia.

Work plans were prepared for pine surveys and ribes eradication in the several national forests of the region. One of these plans - for the George Washington National Forest in Virginia - was approved. Details of the work on national forests will be found under Work Project B. L. R. -4.

II D-2 CHECKING

During the 1942 ribes eradication season regular, advance and post checks were conducted. No definite checking organization has been set up in the region. Checkers are trained from the regular labor rolls and only those men who show aptitude for this type of work are chosen. A good deal of checking was carried on in conjunction with survey work so many of the advance and post checks were made by the mapping crews while conducting pine surveys. It was soon discovered that the running of checks and surveys simultaneously led to some confusion in the matter of keeping survey and checking records straight since both types of work was done by the same men. In the fall of 1942 it was decided to entirely divorce all checking activities from survey work. Thus a man on checking would only be required to look for ribes, leaving all white pine mapping entirely to the survey crews. If the survey map does not give a clear picture of ribes distribution for the purpose of laying out eradication boundaries a checker will be sent into the area to run intermediate strips. His time will be charged to advance or post checking as the case may be, and will thus be no part of the survey. All checking was done by the continuous strip plot method which follows practically the same procedure as used in California.

The following tables give the results of all classes of checking performed in the region. Table 1 for Regular Checks, Table 2, for Advance and Post Checks and Table 3, An Analysis of Checking Results During the 1942 Season.

Table 1
Summary of Regular Checking - 1942

State	Acres Covered	Acres Checked	Percent of Check	Man Days
Georgia	347	45.5	13.1	15
Maryland	63	4.5	6.4	2
North Carolina	12,983	389.5	3.0	276
Tennessee	2,000	53.0	2.5	12
Virginia	7,169	207.1	2.9	118
West Virginia	2,800	70.0	2.5	39
TOTAL	25,362	769.60	3.0	392

Table 2
Summary of Advance and Post Checking - 1942

State	ADVANCE CHECK				POST CHECK			
	Acres Covered	Acres Checked	Percent of Check	Man Days	Acres Covered	Acres Checked	Percent of Check	Man Days
Georgia	21,252	531.3	2.5	106*	-	-	-	-
North Carolina	460	24.8	5.4	10	46,973	1112.44	2.4	400
Tennessee	-	-	-	-	9,611	423.0	4.4	143
Virginia	-	-	-	-	48,830	1220.75	2.5	292
West Virginia	20,241	506.1	2.5	145	31,518	882.50	2.8	376
TOTAL - REGION	41,956	1062.2	2.5	261	136,940	3638.69	2.6	1211

*Man days charged to eradication, therefore now shown on Omnibus Table #4, Sheet #2.

Table 3
Analysis of Checking Data - 1942

STATE		Man Days	Strip Acre	Strip Acre on M.D.	Cost Cost	Cost Per S. A.	Cost Per Acre Cov.
Georgia	Regular	15	45.5	3.3	\$51.45	1.13	0.15
	Advance	106*	531.3	5.0	363.58*	0.68	0.02
	TOTAL	121	576.8	4.8	415.03	0.72	0.02
Maryland	Regular	2	4.5	2.3	6.40	1.42	0.10
	Regular	276	389.5	1.4	946.68	2.43	0.07
North Carolina	Advance	10	24.8	2.5	34.30	1.38	0.07
	Post	400	1,112.4	2.8	1,372.00	1.23	0.03
	TOTAL	686	1,526.7	2.2	2,352.98	1.54	0.04
Tennessee	Regular	12	35.0	4.4	44.64	0.84	0.02
	Post	143	423.0	2.9	531.96	1.26	0.06
	TOTAL	155	476.0	3.1	576.60	1.21	0.05
Virginia	Regular	48	207.1	4.3	175.20	.85	0.02
	Post	292	1,220.8	4.2	1,065.80	.87	0.02
	TOTAL	340	1,427.9	4.2	1,241.00	.87	0.02
West Virginia	Regular	39	70.0	1.8	144.30	2.06	0.05
	Advance	145	506.1	3.5	536.50	1.06	0.03
	Post	376	882.5	2.3	1,391.20	1.58	0.04
	TOTAL	560	1,458.6	2.3	2,072.00	1.42	0.04
SOUTHERN	Regular	392	769.6	1.9	1,363.67	1.78	0.05
APPALACHIAN	Advance	261	1,062.2	4.1	934.38	0.88	0.02
REGION	Post	1,211	3,638.7	3.0	4,360.96	1.20	0.03
TOTAL		1,864	5,470.5	2.9	6,664.01	1.22	0.03

*Although man days and cost for advance checks in Georgia are charged against eradication these are entered here for the sake of analysis.

Checking costs were obtained by multiplying the man days by the average labor wage rate in each State during 1942, which gives a cost figure suitable for general analysis.

From Table 3, it can be seen that the ^{number of} strip acres covered per man day for each State was fairly uniform. The greatest number of strips run per man day was in Georgia, the least in North Carolina. This difference is due to several factors such as topography, speed of running strips due to dense or open ground cover, ribes, population, etc.

Quite a large percentage of the acreage covered by Advance and Post Checks was found to be ribes-free or with so few ribes that little eradication will have to be done.

II D-3 Scouting for Blister Rust and Disease Survey

Newly Infected Counties

On Pine

Alleghany County, Virginia
Montgomery County, Virginia
Roanoke County, Virginia

On Ribes

Anherst County, Virginia
Craig County, Virginia
Montgomery County, Virginia
Roanoke County, Virginia

The year 1942 was not one of great spread of the blister rust, as was 1941. However, scouting for the rust was carried on in North Carolina by State leader Teague and Agent Whitman both on pine and ribes, throughout the growing season but without avail. The same localities and the same bushes which showed rust in 1941 were inspected in 1942, but no rust was located. Mr. Whitman scouted for the blister rust with Forest Service Ranger, Manchester of the Pisgah National Forest during the week of June 11.

Virginia.

In Virginia Messrs. J. G. Luce and H. E. Yost carried on scouting in several of the counties, heretofore not found with infections. On June 5, Mr. Luce located the rust on Poor Mt. in both Montgomery and Roanoke Counties. The rust was on white pine and ribes, growing close to the Forest Service Fire Trail No. 4060. In addition, the rust was found for the first time in the counties of Anherst and Craig, on ribes. This brings the total of newly infected counties in Virginia up to four, and the total of infected counties up to 26. Three infected bushes of *Ribes rotundifolium* were located in Anherst County by H. E. Yost on August 23, on the headwaters of Coffee Creek in Grid P-28, Block 2.

In Craig County, although 400 *rotundifolium* and *cynoscati* were examined in August no rust was located. However, during the week ending September 19, Mr. Yost found the blister rust on *Ribes cynoscati* in Craig County on Route Va. 42, 9.5 miles south of New Castle. On this latter trip, Mr. Yost scouted on pine and ribes also in Alleghany, Bland, Giles, Russell, Tazewell and Wise Counties without finding the rust. Later in the year, Mr. Yost found one white pine infected for the first time in Alleghany County in the Glenwood District of the Jefferson National Forest, the date of the infection being about 1935.

Mr. Yost summarizes the situation in Virginia as follows: "Commercial damage is occurring in Augusta, Highland and Rockingham Counties and to a lesser extent in Bath, Greene, Madison, Page, Rappahannock and Shenandoah Counties." It has generally been checked on the better pine stands, but isolated trees and poor stands in ribes-bearing areas, the value of which does not warrant protecting, are rapidly becoming infected. A tabular list by counties and years when infection was first discovered in Virginia on both pine and ribes is to be found in Mr. Yost's Annual Report for Virginia for 1942.

West Virginia

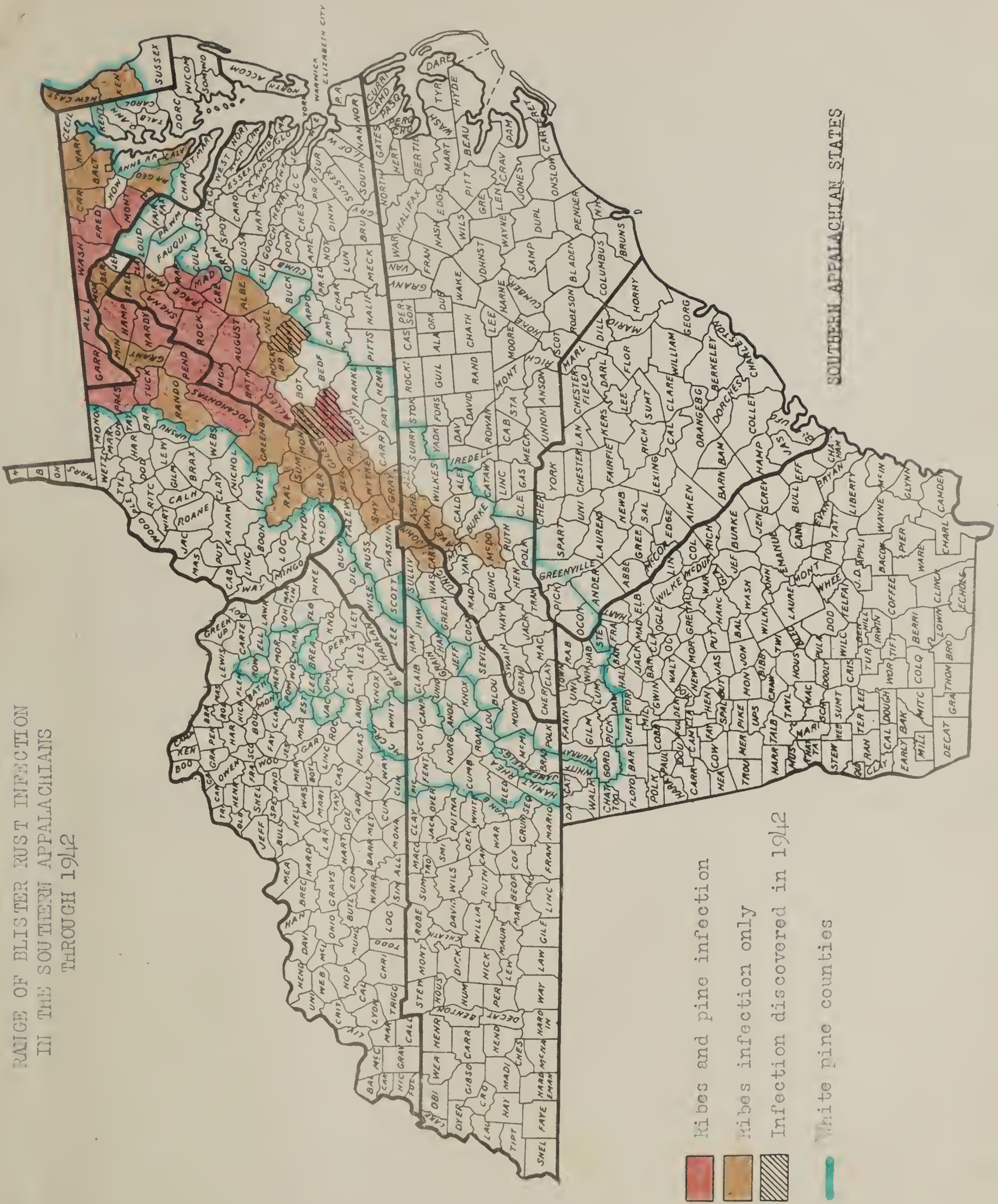
In West Virginia no new counties were added to the list of ones with infections. According to Mr. Welch ribes infections appeared quite heavy in certain sections of Pocahontas and Pendleton Counties. In the Seneca State Forest ribes were heavily infected. None, however, were found in Watoga State Park or on Droop Mt. Battlefield State Park, all in Pocahontas County.

Mr. Welch wrote about August 25, that at one house site just south of Dunmore in Pocahontas County on the Mary Nottingham property where four cultivated ribes species, americanum, grossularia, odoratum and vulgare were growing within a few feet of each other, all species were found infected, the heaviest being on odoratum - lightest on vulgare. Four young pines growing close by showed no visible infection. At three other properties along Thomas Creek cultivated gooseberries and red currants were fairly definitely proven to be the cause of infection to several nearby pines at each place. (See Technical Memo. No. 6, S. A. S.). The owners had refused permission in 1936 - '37 to have their cultivated ribes destroyed, but they permitted this in 1942 when shown the infected pines.

In Pendleton County, heaviest ribes infections were on opposite sides of the county (east and west) on Spruce Knob and Bother Knob. Both of them were over 900 feet from pines. The rust was also found on ribes at Cow Knob, Deer Run, Fort Seybert, Greenwalt Gap, Moyer, Riverton, Ruddle, Smoke Hole, Sugar Grove, Thorn Creek and at Upper Tract. According to Agent G. C. Hamilton, the percent of infection was notably lighter in areas where initial eradication had already taken place. He estimated that about 10% of the bushes and from 2 to 20% of the leaves were infected where initial eradication had been performed, as against 80% of the bushes and from 60 to 80% of the leaves infected in the vicinity of Spruce and Bother Knobs where the ribes had never been destroyed. Although searched for, no ribes were found infected in the vicinity of the Parsons Nursery in Tucker County. One new infestation center on ribes was located in the Greenbrier State Forest on the summit of Fates Mountain in Greenbrier County, but the few infected bushes found were outside a control area. Inspections at seven other localities in this county showed no infections. Although numerous inspections for rust were made in Monroe and Summers Counties in midsummer in the southern part of the State, not a single infection could be found on pine or ribes.

In the Seneca State Forest in Pocahontas County, the heaviest infection on pine was 5% on 80 acres on Thorn Creek. On the Forest as a whole, pine infections are much less than 1%. In Pendleton County, outside of the extreme eastern edge in Shenandoah Mountain, bordering Virginia, Mr. Hamilton writes that his examinations have shown not more than one percent pine infection. On the Shenandoah Mountain, pine infection is much heavier, running up to 10% and better in spots.

RAIGE OF BLISTER RUST INFECTION
IN THE SOUTHERN APPALACHIANS
THROUGH 1942



SOUTHERN APPALACHIAN STATES

III D-4 Keeping of Master Records

A. System Used

In 1940 it was decided that a uniform system was needed to record and illustrate the progress of white pine blister rust control in the Southern Appalachian Region so a Permanent Control Record System was set up. The master records for this system comprise the following record and map sheets: (1) A State Status Map to give a general picture of the State of control in each State by counties (2) A general Summary Sheet (Form AP-18) which gives all necessary control data to date by counties and ownership (3) a legend sheet (4) Permanent Control Record data sheets (Form AP-14) giving a detailed summary by areas or grids for survey and ribes eradication (5) County Index maps showing system of block and grid overlay and status of work in county. Index maps also show ownership. (6) Progress maps (AP-10). The progress map sheets are laid out in 48 mile-square grids which represent one block. The scale is two inches to the mile. Individual field grid maps are plotted on this sheet so a picture of the whole block can be seen. The plotted maps show white pine in two density classes, namely, fifty and more stems per acre and under 50 stems per acre. Two other broad types are also shown, hardwood and yellow pine types. Ribes-bearing areas are also outlined as well as certain topographical and cultural features which may be of aid to the eradication crews.

A good deal of work had to be done on old records before a start was made on the Permanent Control Records. This was necessary because of the change over from various miscellaneous survey methods (See section on Survey Systems used, page III D-6a, to the mile square grid system, correcting old area record sheets, making up base grid maps for field use, devising new field forms to tie in with the final records and in general ironing out various other problems in order to make the system uniform throughout the region.

B. Records Presented in This Report

To illustrate the progressive order of our Permanent Control Records, reduced copies have been made from a set of Georgia records which are presented on the following pages. The records here presented follow the order itemized under Section (A).

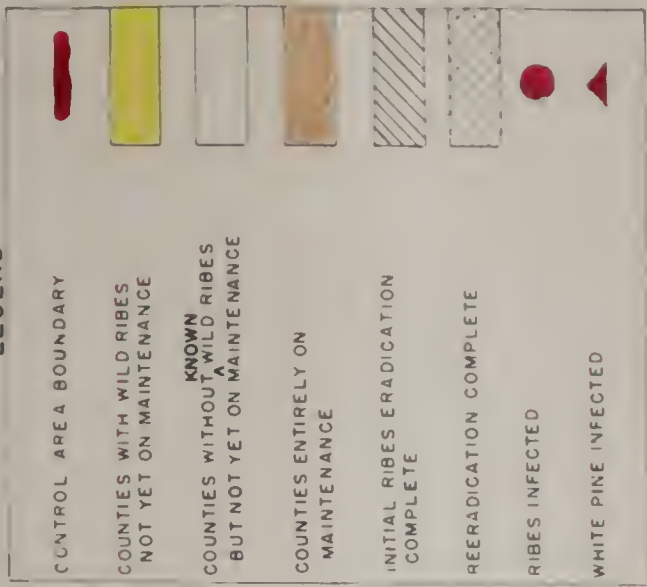
PERMANENT CONTROL RECORD
WHITE PINE BLISTER RUST
CONTROL STATUS MAP

STATE GEORGIA

STATUS AS OF DEC. 31 1942
MONTH DAY YEAR

CONTROL STATUS MAP

LEGEND



CONTROL SUMMARY

AP-14 COL REF	TOTAL CONTROL ACREAGE	950,000.
F-6+7	ACRES OF WHITE PINE WORTH PROTECTING	553,000.
8+9+10	ACRES OF WHITE PINE GIVEN INITIAL PROTECTION	273,020.
E	ACREAGE OF RIBES-BEARING LAND IN CONTROL AREA	17,301.
13+14	ACREAGE OF RIBES-BEARING LAND WORKED	17,301.
I+J	ACREAGE OF RIBES-FREE LAND IN CONTROL AREA	352,554.
K-15	TOTAL NUMBER OF WILD RIBES ERADICATED	5,303,002.
M-BELOW	TOTAL NUMBER OF CULTIVATED RIBES ERADICATED	245,794.
M-ABOVE	PERCENT OF INITIAL RIBES ERADICATION COMPLETE BASED ON ESTIMATED & SURVEYED ACREAGE OF RIBES BEARING LAND ONLY.	100.
100'S		
F		

* TOTAL ESTIMATED & MAPPED ACREAGE REPORTED ON OMNIBUS TABLES
** ACREAGE SURVEYED BY GRID SYSTEM

PERMANENT CONTROL RECORD

WHITE PINE BLISTER DISEASE

STATE OF GEORGIA

STATUS SUMMARY SHEET

STATUS AS OF 31 DAY 1942

COUNTY	PREFERRADICATION				RIBES ERADICATION												NUR SANITATION			INFECTION			CANKER ELIMINATION				MAN-DAYS USED	
	ACRES OF WHITE PINE		CONTROL ACRES	PLANTED	ACRES OF WHITE PINE PROTECTED	NUMBER OF BEARING AREAS	CONTROL ACRES				REMAINING CONTROL AREA NEED-ING INITIAL PROTECTION	ACRES ON MAINTENANCE	RIBES PULLED		NUMBER OF NUR-SE-PLANTED	ACRES MOR-SEL	RIBES PULLED	ON WHITE PINE	YEAR TO	NUMBER OF TREES REMOVED	NUMBER OF CANKERED CUT		PREFERRADICATION ON ERADICATION SURVEY	COST OF RIBES ERADICATION				
	NATIVE	PLANTED					ACRES OF RIBES	NET	GROSS	NET			GROSS	WILD							WILDED							
	PER TO AP 14-10	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		27	28
MURRAY COUNTY	58,937	-	81,901	58,937	-	6	9,562	15,880	71,823	81,391	97,709	510	71,916	1,957,643	8670	-	-	-	-	-	-	-	-	-	-	8,726	19,897.56	
FANNIN COUNTY	85,266	-	107,008	85,266	-	2	-	-	107,008	107,008	107,008	-	107,008	406	8,771	-	-	-	-	-	-	-	-	-	-	725	1,653.00	
GILMER COUNTY	63,818	-	93,746	63,818	-	14	3,303	5,852	90,443	93,746	96,295	-	90,443	712,352	117,136	-	-	-	-	-	-	-	-	-	-	4,144	9,448.32	
UNION COUNTY	8010	-	10,416	8010	-	6	4,144	8288	10,416	10,416	10,416	-	10,416	462,502	7,694	-	-	-	-	-	-	-	-	-	-	70	150.93	
RABUN COUNTY	56,989	-	72,858	56,989	-	-	-	-	72,858	72,858	72,858	-	72,858	-	40,437	-	-	-	-	-	-	-	-	-	-	455	982.37	
TOWNS COUNTY	25,000	-	60,000	-	-	21	292	292	292	292	292	-	-	2,170,973	9,249	-	-	-	-	-	-	-	-	-	-	10,128	22,815.22	
DAWSON COUNTY	6,500	-	22,000	-	-	-	-	-	-	-	-	-	-	-	7,551	-	-	-	-	-	-	-	-	-	-	35	79.80	
HABERSHAM CO.	5,000	-	20,000	-	-	-	-	-	-	-	-	-	-	-	17,576	-	-	-	-	-	-	-	-	-	-	84	191.52	
LUMPKIN COUNTY	15,000	-	40,000	-	-	-	-	-	-	-	-	-	-	-	7,663	-	-	-	-	-	-	-	-	-	-	37	84.36	
PICKENS COUNTY	2,000	-	10,000	-	-	-	-	-	-	-	-	-	-	-	15,956	-	-	-	-	-	-	-	-	-	-	76	173.28	
WHITE COUNTY	10,000	-	25,000	-	-	-	-	-	-	-	-	-	-	-	5,291	-	-	-	-	-	-	-	-	-	-	25	57.00	
GRID MAPPED	273,020	-	385,929	273,020	-	49	12,865	21,732	352,554	365,419	374,286	510	352,541	2,670,407	175,014	-	-	-	-	-	-	-	-	-	-	14,120	32,132.18	
ESTIMATED	279,980	-	584,071	-	-	-	4,436	8,580	4,436	4,436	8,580	-	-	2,633,473	70,780	-	-	-	-	-	-	-	-	-	-	12,528	28,287.22	
STATE TOTAL	553,000	-	950,000	273,020	-	49	17,301	30,312	352,554	369,855	382,866	510	352,541	5,303,882	245,794	-	-	-	-	-	-	-	-	-	-	26,648	60,419.40	
OWNERSHIP																												
NATIONAL FORESTS	114,179	-	144,834	114,179	-	-	10,130	17,615	138,980	149,110	156,885	160	138,980	3,757,514	32,185	-	-	-	-	-	-	-	-	-	-	-	18,539	41,378.27
NATIONAL PARKS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
INDIAN LANDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
STATE & PRIVATE	158,841	-	221,095	158,841	-	-	7,171	12,697	213,574	220,745	226,271	350	213,581	1,546,368	213,608	-	-	-	-	-	-	-	-	-	-	-	8,109	19,041.13
NAT'L FOR EST	144,049	-	305,261	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
STATE & PRIV EST	135,931	-	278,810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL ALL LANDS	553,000	-	950,000	273,020	-	49	17,301	30,312	352,554	369,855	382,866	510	352,541	5,303,882	245,794	-	-	-	-	-	-	-	-	-	-	26,648	60,419.40	

PERMANENT CONTROL RECORD
WHITE, PINE BLISTERS
LEGEND SHEET

LEGEND
SHEET

	SAMPLE	SYMBOL	COLOR USED
WHITE PINE (50 OR MORE STEMS PER ACRE)	W P	W P H	SOLID GREEN LETTERS IN RED INK
WHITE PINE (LESS THAN 50 STEMS PER ACRE)	W P	W P H	LEAVE UNCOLORED
WHITE PINE PLANTING SITE			CROSS MATCH YELLOW
WHITE PINE PLANTATION			SOLID YELLOW
CONTROL ZONE BOUNDARY			CROSS MATCH GREEN
WILD RIBES-BEARING AREAS			ORANGE LINE
CULTIVATED RIBES			NOT WORKED BORDER ST. WORKING CROSS MATCH REAR-DOUBLE CROSS MATCH ON MAINTENANCE-SOLID NOT PULLED-BLACK CIRCLE
OTHER TREE SPECIES			PULLED MIXED MAPLES YELLOW PINE
CUT-OVER(G.O.) OR BURNED(B.) AREA			TOOTHED LINE BLACK NO. 1 INK LETTERS IN RED INK
WHITE PINE NURSERY			BLACK NO. 1 INK
RIBES INFECTION			SOLID RED TRIANGLE
WHITE PINE INFECTION			BLACK NO. 1 INK
IMPROVED ROAD			BLACK NO. 1 INK
UNIMPROVED ROAD			BLACK NO. 1 INK
RAILROAD OPERATING			BLACK NO. 1 INK
RAILROAD ABANDONED			BLACK NO. 1 INK
TRAIL			BLACK NO. 1 INK
RUNNING STREAM			BLACK NO. 1 INK
INTERMITTENT STREAM			BLACK NO. 1 INK
LAKE			BLACK NO. 1 INK
MAIN RIDGES			BLACK NO. 1 INK
CLIFFS			BLACK NO. 1 INK
SAWMILL OPERATING (WHEN MAPPED)			BLACK NO. 1 INK
SAWMILL ABANDONED (WHEN MAPPED)			BLACK NO. 1 INK
HOUSE OCCUPIED			BLACK NO. 1 INK
HOUSE ABANDONED			BLACK NO. 1 INK
FIELD (PASTURE OR CULTIVATED)			BLACK NO. 1 INK
LOOKOUT TOWER			BLACK NO. 1 INK
TRIANGULATION STATION			BLACK NO. 1 INK
STATE BOUNDARY LINE			BLACK NO. 1 INK
COUNTY BOUNDARY LINE			BLACK NO. 1 INK
NATIONAL FOREST BOUNDARY			BLACK NO. 1 INK
NATIONAL PARK BOUNDARY			BLACK NO. 1 INK
B.R.C. LOCATION POSTS & MARKERS			BLACK NO. 1 INK
STUDY PLOTS			BLACK NO. 1 INK
CANKER ELIMINATION			BLACK NO. 1 INK

PERMANENT CONTROL RECORD

WHITE PINE BLISTER 'JST
PRE-ERADICATION SURVEY

COUNTY MURRAY
QUADRANGLE DALTON

STATE GEORGIA

PRE-ERADICATION SURVEY

PINE AREA NUMBER	GRID NUMBERS	OWNER USE	SURVEY DATA			CONTROL DATA (ESTIMATED)			STAND DATA			INFECTION — ALTERNATIVE PERCENT OF PINE TREES	REMARKS	
			CENTRAL AREA MARKED DATE	AMOUNT NATIVE PLANTING DATE	PLANT DATE	SURVEY DATE	ACRES TO WORK	ACRES BO HOURS	PERCENT W/RY COVER	PERCENT COVER OVER 2	PERCENT COVER OVER 2			
2	3	4	5	6	7	8	9	10	11	12	13	14	15	
6	A-27	PRIVATE FOREST	553	95	180	1940 FWPA	55.3	32	75	15	10	2	76	13
6	A-28	PRIVATE FOREST	440	96	113	1940 FWPA	440	32	75	15	10	2	50	13
6	A-29	PRIVATE FOREST	616	157	162	1940 FWPA	616	32	75	15	10	1	60	15
6	B-27	FEDERAL FOREST	640	199	167	1940 FWPA	640	32	75	15	10	1	65	25
6	B-28	FEDERAL FOREST	618	242	104	1940 FWPA	618	32	75	15	10	1	63	19
6	C-27	FEDERAL FOREST	640	302	35	1940 FWPA	440	110	79	12	9	1	80	33
6	C-28	FEDERAL FOREST	640	442	30	1940 FWPA	640	32	75	15	10	1	80	28
6	D-27	FEDERAL FOREST	640	232	56	1940 FWPA	500	100	75	15	10	1	67	28
6	D-28	FEDERAL FOREST	640	336		1940 FWPA	640	32	85	10	5	1	74	
6	E-27	FEDERAL FOREST	640	366	23	1940 FWPA	320	116	80	14	6	1	72	31
6	E-28	FEDERAL FOREST	640	471	158	1940 FWPA	640	32	90	6	4	1	86	40
6	F-27	FEDERAL FOREST	640	311	160	1940 FWPA	125	200	90	6	4	1	116	23
6	F-28	FEDERAL FOREST	640	395		1940 FWPA	640	32	85	10	5	1	103	
6	F-29	FEDERAL FOREST	640	423	83	1940 FWPA	640	32	52	23	25	1	108	32
GRAND TOTAL			8,677	4,067	1,271	15	1,405	7,257						

PU = CHATTANOOCHEE NATL. FOR. PURCHASE UNIT

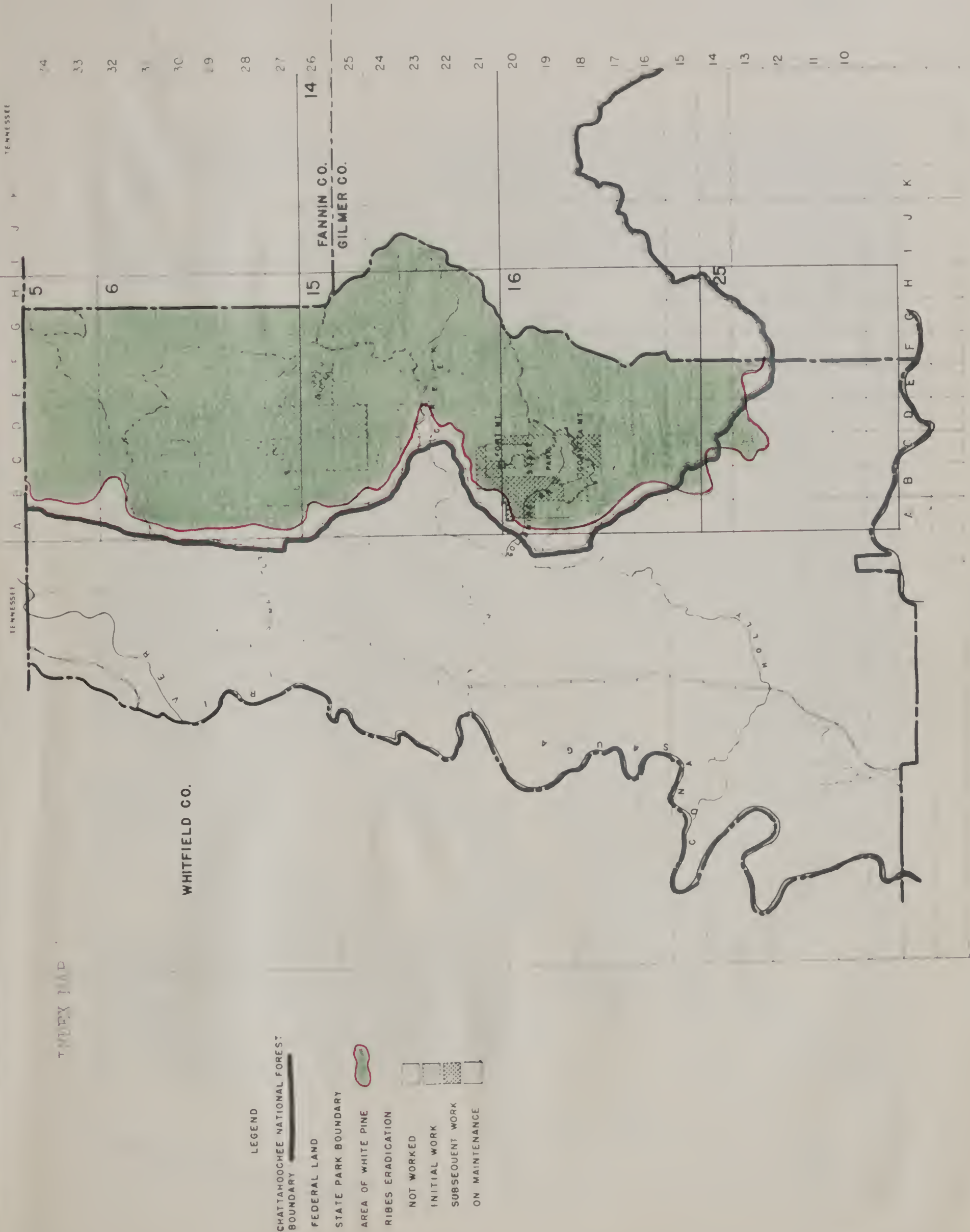
PERMANENT CONTROL RECORD

WHITE PINE BLISTE RUST

INDEX MAP

STATE GEORGIA

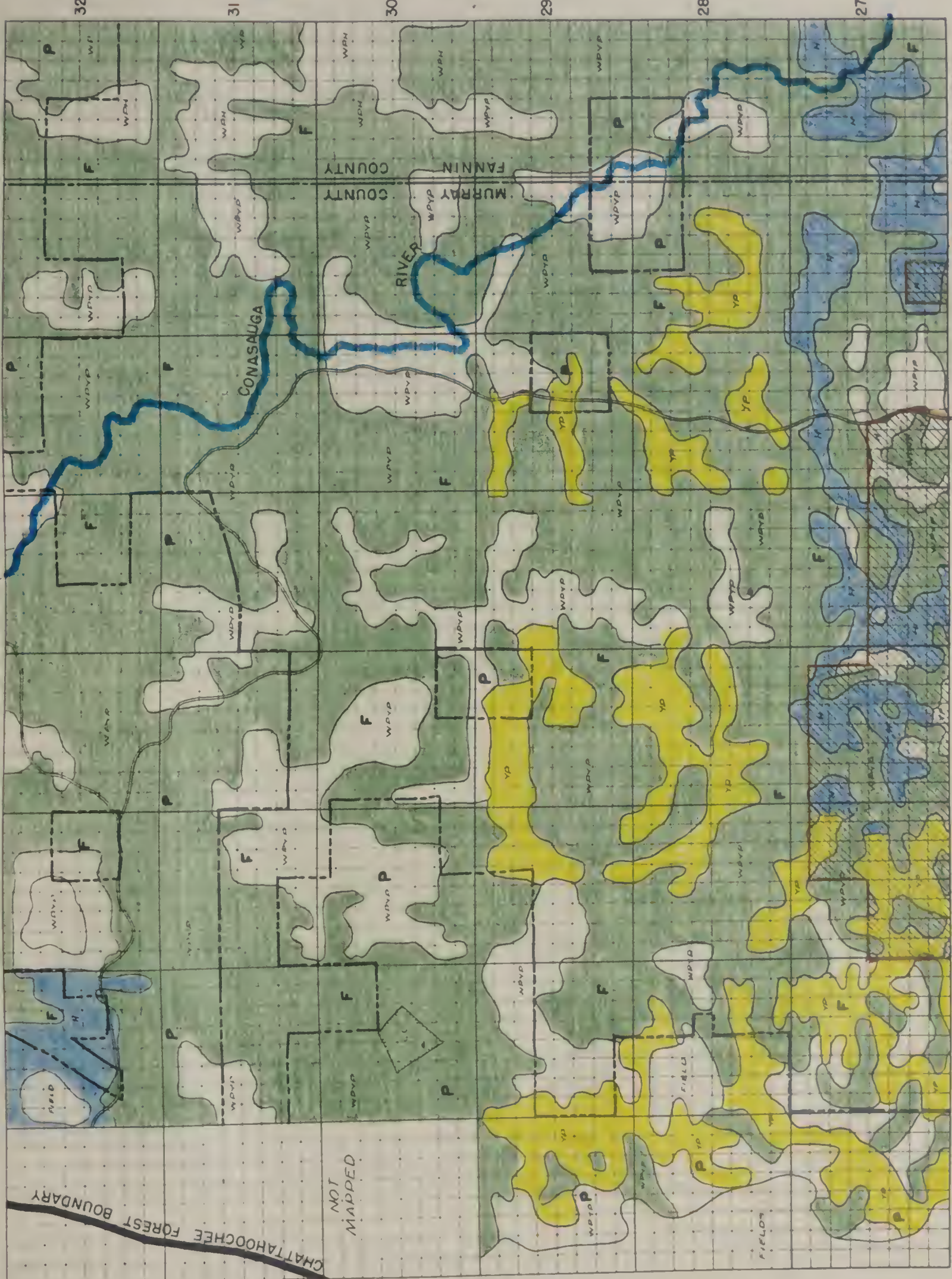
COUNTY MURRAY



PROGRESS MAP

PROGRESS MAP

STATE GEORGIA COUNTY FANNIN, MURRAY DALTON QUADRANGLE YEAR 1940-1943



- LEGEND**
- WHITE PINE SO AND VIT TREES PER ACRE (P)
 - WHITE PINE INTERIOR TREES PER ACRE (P)
 - WHITE PINE PLANTING SITES
 - PLANTED WHITE PINE
 - CONTROL ZONE BOUNDARY FOR RUBES BEARING AREAS
 - OTHER SPECIES (HARDWOODS AND YELLOW PINES)
 - WHITE PINE LOGGED OFF OR BURNED
 - WHITE PINE NURSERY
 - RUBES INFECTION
 - PINE INFECTION
 - IMPROVED ROAD
 - UNIMPROVED ROAD
 - RAILROAD OPERATING
 - RAILROAD ABANDONED
 - TRAIL
 - RUNNING STREAM
 - INTERMITTENT STREAM
 - MAIN RIDGES
 - CLIFFS
 - SAWMILL OPERATING
 - SAWMILL ABANDONED
 - HOUSE OCCUPIED
 - HOUSE ABANDONED
 - LOOKOUT TOWER
 - TRIANGULATION STATION
 - STATE LINE
 - COUNTY LINE
 - NATIONAL FOREST BOUNDARY
 - NATIONAL PARK BOUNDARY
 - LOCATION POSTS OR MARKERS

II D4h

II-D, 5a



PLAYED BY HOOPER

II D-5 FIELD STUDIES

Study Plots to Determine Effectiveness of Chemicals
Killing Decapitated Ribes BushesTennessee Plots

A chemical study plot with *R. curvatum* was laid out on February 9, 1942 by Agent Walter A. Stegall at Piney Creek in Rhea County, Tennessee. The results as observed show that 3-oz. doses of salt and borax (50-50 mixture) applied to crowns of decapitated bushes of *R. curvatum* have been one hundred percent successful in preventing sprouting at least through May 4, 1942. The details are as follows:

A mixture of 50-50 salt and borax was applied in 3-oz. doses each to 50 crowns of decapitated bushes, with an equal number of decapitated bushes left as checks which were not treated. Canes were all cut off at crowns and chemicals were applied on February 9, 1942. Each crown treated was marked with a small yellow stake with about six inches showing above the surface of the ground. Scattered among the treated crowns were 50 untreated crowns of assorted sizes and these were marked with a pink-topped stake. After all of the bushes were treated and staked leaves and duff were scattered over the ground to keep animals from molesting the chemical applications and to leave the ground in as natural a state as possible. General examinations were made March 12 with Mr. J. C. Ball and April 6th with Mr. H. E. Yost at which time indications were that a complete kill had been made on treated crowns and no kill on those untreated. As early as the March 12th examination, buds were noted developing on all untreated crowns, while no buds had appeared on the treated crowns.

On May 4, 1942 a final check was made on all the crowns under observation. The following notes were made:

Number treated crowns not sprouting, apparently dead-50
 Number treated crowns sprouting - none
 Number untreated crowns sprouting - 50
 Feet Live Stem from untreated crowns totaled 86.8 for an
 average of 1.7 feet live stem per crown.

At final check it was noted that only the crowns treated were dead and that the roots appeared fully alive. Most of the treated crowns were left in the ground for future examinations. As all live (untreated) crowns were pulled up and destroyed, no confusion should be experienced in future examinations as only treated crowns were left unmolested.

Virginia Plots

In Virginia, tests were begun early in 1942 on the Shenandoah and Blue Ridge Mountains of the effect of chemicals on the root systems of decapitated wild gooseberries, (*R. cynosbati* or *rotundifolium*) under various conditions.

On February 26, two study plots were laid out by Mr. J. G. Luce on Hawksbill Mt. in the Shenandoah National Park in Madison County on Q-10, Block 3, to determine the effectiveness of salt and borax in winter eradication work. One plot was for bushes in the shade and the other for bushes without shade. There were 15 bushes in each of the two plots. Four ounces of salt-borax mixture were placed on each crown. On May 26, 1942, Mr. Luce examined 18 bushes and found two of them sprouting.

The Shenandoah Mt. Plots in Augusta County in Grid HH, Block 2 in the George Washington National Forest were established March 18, 1942. All gooseberries in the four subplots were decapitated at the crown. The following table shows the treatments and the number of bushes treated:

II D-5 FIELD STUDIES (Contd.)

Subplot	No. of Ribes	Treatment
A 1	19	1/2 pint diesel oil; crown not covered
A 2	18	4-oz. salt-borax; crown not covered.
C 1	16	1/2 pint diesel oil, crown covered with forest litter
C 2	15	4-oz. salt borax; crown covered with forest litter

When examined May 25, 1942 by J. G. Luce and Geo. C. Cramer, all bushes were dead. Other non-treated ribes were in full leaf at this time and bearing fruit. Some of the treated bushes had been disturbed by a bear, apparently seeking the salt.

West Virginia Plots

Mr. R. W. Welch reports that a study plot was laid out on March 11, 1942 in Monroe County one-half mile northeast of Peterstown on Pine Area No. 14. Seven very large Ribes rotundifolium bushes were decapitated immediately above the crown and each treated with 3-ounces of salt and borax (50-50 mixture). On May 1 and early June, the bushes were examined and a hundred percent kill observed. Mr. Hamilton in Pendleton County treated 10 ribes bushes (species not mentioned), but they were either cynosbati or rotundifolium. Three ounce dosage of salt-borax were placed on the decapitated crowns on October 22, 1941. No sprouting occurred by April 30 or July 23, 1942.

Maryland Plots

Mr. H. P. Yost on May 29, 1942 tested the effect of ammonium sulfamate as a ribicide, at the Negro Mt. Pine Tower on the crest of Negro Mt. in Garrett County, Maryland, about one mile south of U. S. Route 40. Tests were made on decapitated bushes as well as on bushes with foliage. These latter tests will be dealt with in later pages. Through the courtesy of the Grasselli Chemical Company, several pounds of chemical were secured. The bushes tested were Ribes rotundifolium, of medium size, with 20-50 feet of live stem per bush. In the case of the decapitated bushes, the bushes were cut off at or slightly above the crown. Leaves and other debris were removed sufficiently to expose the crowns. The ammonium sulfamate was applied to the crowns as crystals and left uncovered.

The following Table shows the treatment and the number of bushes treated:

Test No.	Bush Nos.	Treatment
1	1-5	1/4 oz.
2	6-10	1/2 "
3	11-15	1 "
4	16-20	2 "

II D-5 FIELD STUDIES (Continued)

The work was performed on a clear day, temperature approximately 80° F. The bushes had reached the stage of development where mature fruit was found on some of them. No bloom was found on any bush. (*Ribes rotundifolium* does not ordinarily produce a heavy crop of fruit in this vicinity).

Each crown and bush was marked with a stake 18" to 30" in height, bearing a number corresponding to those given in the above tabulation.

The bushes were examined June 2, 1942 about four days after treatment. No excessive rainfall had occurred. There was no evidence of growth of any decapitated bushes. Further examinations were made on June 19 and August 10, 1942, and no evidence of growth was observed on any of the bushes from any of the four dosages.

Mr. Yost comments as follows on the results: "Ammonium sulfamate when used under the conditions encountered in this test could be expected to completely kill decapitated ribes bushes of this species.

The crystals of ammonium sulfamate are readily soluble in cold water. The various quantities were weighed and placed in sealed envelopes and paper bags on May 24. These were then placed in heavy paper bags in which the chemical was received. The package was then placed in an automobile where it remained until it was used on the 29th. At the end of five days, it was found that each package had set up in a solid mass but had not lost its crystalline form and was easily crushed and reduced to a granular state. The crystal showed a marked tendency to stick to the paper envelopes and would probably be more difficult to handle under field conditions than a salt-borax mixture or other mixtures commonly used.

A few bags of crystals were left over at the end of the test. These were stored in a basement; at the end of approximately one month practically all of the crystals had changed into a liquid form. In general, ammonium sulfamate did not prove to be as satisfactory as salt and borax for application to ribes roots or crowns under field conditions."

General Conclusions

The results from the Maryland, Tennessee, Virginia and West Virginia studies in 1942 of chemical treatment of the crowns of decapitated bushes of three species of wild gooseberries, *Ribes curvatum*, *R. cynosbati* and *R. rotundifolium*, show uniformly that salt-borax (50-50) mixture in three and four ounce doses, diesel oil* one-half pint per crown, and ammonium sulfamate** from 1/4 ounce to 2 ounces per crown have resulted in 100 percent killing of the bushes. The first two chemicals were used in the winter, while the last chemical was used in the growing season. Where bushes are very large with large root systems and growing in difficult situations the most economical way of killing them would seem to be to decapitate them at the ground level and put a dose of salt-borax on the crown.

Resume¹ of Previous Experiments With Chemicals on Decapitated Ribes Bushes

In 1940 Mr. Yost worked with *Ribes rotundifolium* in Garrett County, Maryland on the west slope of Meadow Mountain, at 2800 feet elevation, in open hardwoods trying out six different chemicals on the crowns on July 25. Each chemical was tested on eleven plants. Results were secured on October 7, 1940. One hundred percent killing was secured with (A) Borax (5 parts) and sodium chlorate (1 part) mixture in one ounce and two ounce dosages, with (B) diesel oil in 2 ounce and 4 ounce dosages;

* On *R. cynosbati* or *rotundifolium*.

** On *R. rotundifolium*.

II D-5 FIELD STUDIES (Continued)

with (C) common salt with 4.4 ounce dosages, and (D) ammonium thiocyanate with 1 and 2 ounce dosages. A 91% kill was secured with (A) salt 2.2 oz. dosage, and (B) Borax 2.6 oz. dosage, while an 82% kill was secured with 1.3 oz. dosages of borax. A 100% failure was secured with used crank case oil in 2 oz. and 4 oz. dosages, while all checks also sprouted.

On June 24, 1941 Mr. Welch experimented with common salt on large *Ribes cynosbati* bushes in southern West Virginia, using 36 bushes or 12 each with 2 oz., 3 oz., and 4 oz. for each experiment and 12 bushes as a check. The 48 bushes were clipped with pruning shears just above the crown. The experiments resulted in killing as follows: 91 2/3% with 2 ounces per bush, 83 1/3% with 3 oz. per bush, and 75% with 4 oz. per bush. Steepness of slope was responsible for rapid runoff of salt solution during the rains in the case of the three bushes which sprouted in the 4 oz. per bush experiment. The results were secured on April 15, 1942.

Ten of the twelve bushes in the check plot, which were decapitated but not treated with chemicals, sprouted.

Chemicals Used on Ribes Bushes Not Decapitated

Tennessee Plots

Mr. Walter A. Stegall on February 17, 1942 treated ten *Ribes curvatum* bushes in Rhea County, Tennessee at Piney Creek, as follows:

4	with	50-50	salt-borax	mixture,	3	oz.	dosage.
3	"	"	"	"	"	"	"
1	"	1-qt.	crank case	oil			
2	"	2-qt.	"	"	"	"	"

All chemicals were applied at ground level. Results May 4, 1942, no damage occurred to crank case oil-treated bushes. Of the four-3 oz. salt-borax treated bushes, all were slightly affected but would survive. Of the three-6 oz. salt-borax treated bushes, one was destroyed by a varmint digging out the crown, one was healthy and one was stunted but would survive. The bushes were all destroyed after the examination on May 4, 1942.

West Virginia Plots

Mr. Welch experimented with three very large *Ribes rotundifolium* bushes in Monroe County, West Virginia one-half mile southeast of Peterstown (See also under decapitated bushes) without removing any top. On March 11, 1942 one bush was treated with a 6-oz dosage of salt-soda (50-50) mixture, while two were treated with the regular 3-oz. dosage; the chemical being placed around the stem at the crown. On May 1 and early in June these three bushes were surviving, and seemed to be on the road to complete recovery.

Maryland Plots

As the result of an article published in the Agricultural News Letter, January-February, 1942 by the E. I. DuPont Company of Wilmington, Delaware, Mr. H. E. Yost decided to test ammonium sulfamate as a ribicide on ribes bushes as a spray on the foliage. The 10 bushes tested on May 29, 1942 were *Ribes rotundifolium* of medium size, with from 20 to 50 feet of live stem per bush. They were growing under a medium

II D-5 FIELD STUDIES (Continued)

dense stand of hardwoods at an elevation of approximately 2,900 feet. Notes on the dosages follow:

Test No.	Bush No.	Treatment
5	21-25	2 pounds per gallon of water. 1 pint of solution was applied to 5 bushes.
6	26-30	1 pound per gallon of water. 1 pint of solution was applied to 5 bushes.

Bushes which were sprayed were given two applications at 15 minute intervals, each sufficient to wet practically all of the foliage and at the same time avoid applying a large enough amount that it would run off to any extent. The solution was sprayed on, using a hand sprayer of the "flit gun" type.

The work was performed on a clear day, temperature approximately 80° F. The bushes had reached the stage of development where mature fruit was found on some of them. No bloom was found on any bush. (*Ribes rotundifolium* does not ordinarily produce a heavy crop of fruits in this vicinity).

Each bush was marked with a stake 18"-30" in height bearing a number corresponding to those given in the above table.

After spraying the bushes, the solution which was left over was all diluted to the concentration of 1 pound per gallon and was sprayed on wild blackberry briars near the plot. While spraying the ribes bushes, some of the solution also fell on the leaves of soft maple sprouts and ferns which were growing adjacent to the ribes plots.

While examined June 2, June 19, and August 10, 1942, the results of the first two inspections are here omitted. At the final inspection in August, on the bushes sprayed at the rate of 1 pound per gallon, practically all of the old leaves had dropped and a considerable amount of the one and two year old wood on the canes were killed. The bush, however, produced considerable new growth from the crown and lower parts of the canes. A crop of leaves had been formed on this new growth and the total amount of leaf surface at this time was approximately $\frac{1}{3}$ as much as at the time the bushes were originally sprayed. Those bushes sprayed at the rate of 2 pounds per gallon were practically the same as those sprayed with the lower concentration. Some of the blackberry bushes which were sprayed appeared to have been completely killed, including the root system. Others, presumably those of which only part of the canes had been sprayed, were not completely killed. Some of the wood was killed on the maple, and at this time two chestnut oak sprouts were also observed which were evidently sprayed and partially killed.

When used as a spray, there is little probability of the bushes being killed. For behavior of the chemical on decapitated bushes, see notes on previous pages.

General Conclusions

From the limited experiments with ten ribes bushes, each in Tennessee and Maryland, which had not been decapitated, and with three bushes in West Virginia, which were treated with salt-borax mixture, crank case oil and with ammonium sulfamate used as a spray on the foliage, it is concluded that none of these chemicals in the dosages used are satisfactory as ribicides since all bushes so treated survived.

Field Studies - Pine InfectionsMaryland

Mr. Yost writes that a series of study plots was established in Allegany County, Maryland, in the fall of 1941 and Spring of 1942 for the purpose of determining the amount of blister rust resulting from various amounts of ribes live stem., viz., 25, 50, 75 and 100 feet. About June 20 he reported that "The Green Ridge pine infection plots on the Carpenter tract progressing favorably, each location of ribes was pruned to its proper amount of live stem. Infection is medium to heavy on all of these transplanted bushes. Few telia are present."

For the Toliver Run and Deep Creek Lake Pine Infection Studies in Garrett County, Maryland, refer either to Roy G. Pierce's Annual Reports for 1939, 1940 and 1941 or to Mr. Yost's Maryland Annual Reports for same years.

Virginia

The pine infection plot on Reddish Knob Drive was continued. An observation was made in May by Agent Cramer. The following table shows the progress of the disease. The tabulation showing canker age groups indicates one 1931 canker being observed for the first time this year and also the disappearance of a 1932 canker observed in 1941 and 1940. Slight increases are also shown in the 1934-1936 groups and a decrease in the 1937 group. Marked increases are shown in the 1938 and 1939 groups. As many as 19 cankers were found on one tree.

It was found on similar studies in Maryland that it is impossible for the average person to observe and record by year of origin a large number of cankers and get the same results each year. These figures must be regarded as estimates since it is impossible to determine, under field conditions, the age of the internode on which a canker approximately 10 years old originated. It was formerly believed that one and two year old cankers were usually overlooked and three year old ones usually found. According to Dr. S. B. Fracker, former Chief of the Division, some cankers apparently do not develop to a point where they can be readily observed for five or even six years. The percentages of mortality and infected trees is a more accurate indication of the progress of the disease.

Study Plot in Infected White Pine Stand Reddish Knob Drive
Near West Virginia Overlook

	Accumulated Totals		
	1940	1941	1942
Number of White Pines	99	99	99
Number Infected	44	56	62
Percent Infected	44.10	56.50	62.60
Cankers	120	180	236
Average per tree infected	2.75	3.21	3.81
Average per tree on plot	1.22	1.82	2.38
Canker Age Group			
1931	-	-	1
1932	1	1	1
1933	1	2	2
1934	16	13	14
1935	18	17	19
1936	23	23	24
1937	33	43	42
1938	27	70	84
1939	2	11	50
Total	121	180	236

Field Studies - Ribes Regeneration

Tennessee

Mr. Yost writes the following regarding the study plots which were examined in 1942:

Plot No. 1, Greene County. This plot was established in June 1940 and was apparently on a very good Ribes cynosbati site since originally the bushes occurred at the rate of over 8,000 per acre. Following the initial work, bushes remained at the rate of 416 per acre with 53.3 feet of live stem. In November 1941, only 150 bushes were found per acre. Approximately two-thirds of the crown sprouts had disappeared and about three-fourths of the seedlings were also gone by the end of 1941. By April 1942 the crown sprouts had further decreased from 100 to about 83. The number of seedlings, however, increased from 16 to 67. The number of original bushes, or those larger than seedling stage, missed by the crew remained the same during 1941-1942. During the entire period of June 1940 to April 1942 the average number of bushes decreased from 416 per acre to 383, while the live stem increased from 53.3 to 466 feet. This would indicate that there is a mortality in crown sprouts and also that the seedling increase does not reach its height immediately following eradication. These observations, of course, are very preliminary since it represents only one plot over a relatively short period of time.

Plot No. 2, Greene County. This plot was last checked in September 1941 and therefore no examination was made in April 1942, since it was felt that the data would be substantially the same.

Plot No. 1, Carter County. This plot was established on the site which originally had a heavy growth of Ribes americanum. Inspections from 1939 through 1941 showed a relatively small comeback. Between September 1941 and April 1942, the plot was evidently disturbed, apparently by persons gathering herbs. No ribes of any kind were found on the plot and it is believed that the seedlings occurring at the rate of 50 per acre in the fall of 1941 were destroyed by this soil disturbance. Observations should continue on the plot as seedlings may continue to appear.

Plot No. 1, Cocke County. This plot was established in June 1941 and Ribes cynosbati bushes were found at the rate of 2,525 per acre. During the period of June 1941 to April 1942, apparently there was no comeback, as no bushes could be found on the plot. Possibly the inspection was made too early, although one small ribes bush in the immediate vicinity was found in leaf.

Plot No. 2, Cocke County. Ribes cynosbati bushes originally occurred there at the rate of 800 per acre. During the period of June 1941 to April 1942, no comeback was observed. On 2 milacres over the plot, numerous seedlings of some species were observed but could not be identified as only the two primary leaves, or cotyledons, were visible. This plot should be examined and particular notation made of milacres 16 and 18.

Plot No. 1 and No. 2, Cumberland County. Discontinued

Field Studies - Ribes Regeneration (Continued)

Plot No. 1, Bledsoe County. Plot No. 1, Rhea County. Both of these plots were established in April 1942 and both were bearing Ribes curvatum at the rate of 3,800 per acre respectively. These plots should be examined in the Spring of 1943.

II D 6 Publication of Results and Findings - Reports

The Annual Report on White Pine Blister Rust Control, Southern Appalachian States for the calendar year 1941 was written by Roy G. Pierce with the assistance of J. Curtis Ball, H. K. Cooper and State leaders - August 1, 1942.

Annual Reports for 1941 were prepared by the State leaders of Georgia, Maryland, North Carolina, Tennessee and West Virginia, and submitted to the Richmond and Washington Offices early in the year 1942.

The Ribes Ecology Seminars, a series of short papers in dialogue on the ecology of currants and gooseberries of the region begun in July 1941, which ran for 22 numbers, was continued in December 1942 for two numbers, Nos. 23, and 24.

The following articles concerning blister rust control in the Southern Appalachian States were printed or put out in mimeographed form.

1. Ashcroft, Dr. J. M. White Pine Disease, West Virginia Conservation, January 1942, Published in Charleston, West Virginia.
2. Gray, T. D. Financial Report on White Pine Blister Rust Control, Fiscal Year 1942. June 30, 1942, page 28 with short note on cooperation with U. S. Department of Agriculture, pages 30, 31. In Annual Report of the Conservation Commission of West Virginia, July 1, 1941 to June 30, 1942.
3. Murphy, Jr., Milledge. Georgia Protects White Pine. Destruction of Gooseberry Bushes Saves Trees from Fate Suffered by State's Chestnut Growth. Outdoor Georgia, Volume 10, No. 9, Pages 4 and 5, March 1942, Illustrated, Published by Georgia Department of Natural Resources, Atlanta.
4. Pierce, Roy G. and Welch, Ralph W. An Analysis of Ribes Eradication on Thirty-Five Areas in Pocahontas County, West Virginia, Which were Worked First in 1934 to 1936 and Reworked in 1941. 7 pages, October 31, 1942. Technical Memorandum No. 4, Division of Plant Disease Control, Richmond, Virginia.
5. Pierce, Roy G. The Spread of White Pine Blister Rust in Southern Appalachian States in 1941, The Plant Disease Reporter, U. S. Department of Agriculture. Volume 26, No. 2, pages 54 and 55. February 1, 1942.
6. Yost, H. E. A Comparison of Blister Rust Infection on Pine in Seven Protected Areas and Ten Unprotected Areas in Garrett County, Maryland, Six or More Years After the Initial Working. 4 pages, June 1, 1942. Technical Memorandum No. 3, Division of Plant Disease Control, Richmond, Virginia.
7. Brannon, C. H. Blister Rust Control. In Report of the North Carolina Department of Agriculture From July 1, 1940 to June 30, 1942, pages 57, 59. (With brief Financial Statement of Disbursements on Blister Rust Control by A. R. Powledge, page 32).

II D-7 Recommendation for Future Work

It is recommended that Regular Funds be allotted sufficient to employ all supervisory personnel, whether engaged in work on State or Private land, National Forest or National Park lands. This is important, particularly for agents on State and Private work, since the payment of an agent's salary from 3103 Funds decreases materially the actual amount of eradication work which can be done on that project.

It is recommended that the plan of reorganization of the work in the Southern Appalachian States be approved so that it may be put into effect, that is, of combining two or more states under one leader. This is already in effect in the case of Delaware, District of Columbia, Maryland and Virginia, under the leadership of Mr. Yost. Other steps in the reorganization will be put into effect when and if approved.

It is recommended that field studies on ribes regeneration, rapidity of spread of rust to pine, effect of varying amounts of ribes live stem on the spread of rust, etc., be continued on a small scale.

It is recommended that efforts be continued to place before State authorities and others in Maryland and Virginia the needs and costs of the blister rust control work to the end that adequate funds will be allotted to cooperate with the Federal Government in such work.

II E. Vacant

TABLE # 1 (Sheet #1)
SUMMARY OF 1942 RIBES ERADICATION

State	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Acreage Number Ribes Destroyed		Number 8-Hour Man-Days
							Wild & Cult.	Cult. only	
Ala.	21,291	-	203	347	9,710	312	21,638	9,710	515
Ariz.	-	-	-	5	8	(1)	5	8	(1)
Cal.	-	-	-	123	1,854	52	123	1,854	52
N. C.	3,826	131,860	655	2,815	94,882	855	7,641	226,742	1,510
Conn.	53,146	51,164	694	6,931	48,370	1,186	60,077	99,534	1,880
Va.	2,008	93,368	579	44,633	332,508	2,979	46,641	425,876	3,558
N. Va.	22,509	54,482	342	38,907	88,201	1,381	61,416	142,683	1,723
TOTAL	102,780	330,874	2,473	94,761	575,533	6,765	197,541	906,407	9,238

TABLE # 1 (Sheet #2)
SUMMARY OF 1942 RIBES ERADICATION

State	Ribes Per Acre		Man-Days Per Acre		Number of Camps		Number of Employees			
	Initial Eradication	Reeradication	Initial Eradication	Reeradication	S.C.S. & W.P.A.	Reg.	Total S.C.S. & W.P.A.	Reg.	Total	Super-vision
Ala.	-	28.00	-	0.899	-	-	-	10	10	1
Ariz.	-	1.60	-	-	-	-	-	-	-	1
Cal.	-	15.10	-	0.423	-	-	-	7	7	3
N. C.	34.50	24.90	0.171	0.224	-	-	58	39	97	100
Conn.	.96	6.98	0.015	0.171	-	-	70	-	70	73
Va.	46.50	7.40	0.288	0.066	-	-	142	24	66	70
N. Va.	2.42	2.27	0.015	0.035	-	-	19	18	57	40
TOTAL	3.22	6.07	0.024	0.071	1	-	189	96	287	303

(1) Worked by State Leader - charged to supervision.

SUMMARY OF 1942 RIBES ERADICATION - BY PROGRAMS
(Including all work - initial and reeradication)

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Regular and Cooperative

W. P. A. (State)

C. C. C and S. C. S.

State	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Wild and Cult. Ribes Destroyed
Ga.	21,638	9,710	515	-	-	-	-	-
Ky.	5	8	(1)	-	-	-	-	-
Mi.	123	1,854	52	-	-	-	-	-
N. C.	2,549	36,584	308	5,092	190,158	1,202	-	-
Tenn.	-	-	-	60,077	99,534	1,880	-	-
Va.	36,223	91,141	1,141	10,418	331,735	2,417	-	-
W. Va.	50,374	84,349	1,183	9,917	58,322	540	1,125	12
TOTAL	110,912	223,646	3,199	85,504	682,749	6,030	1,125	12

(1) Worked by Agent. (2) Work done by State leader & Jack Myers of S. C. S.

TABLE #3 SHEET #1

SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP - 1942

LAND OWNERSHIP	INITIAL WORK			RERADICATION WORK			TOTALS		
	Acreage Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Ribes Destroyed	Number 8-Hour Man-Days
Nat. Forests	11,238	129,057	846	32,157	146,564	1,850	43,695	275,621	2,696
C&C Rev. Lands	-	-	-	-	-	-	-	-	-
Other Pub. Domain	-	-	-	-	-	-	-	-	-
Nat. Parks	7,031	268	54	1,942	179,289	817	9,673	179,557	871
Ind. Reservations	-	-	-	-	-	-	-	-	-
Subtotal(Fed)	18,969	129,325	900	34,399	325,853	2,667	53,368	455,178	3,567
State & Priv.	83,811	201,549	1573	60,362	249,680	4,098	144,173	451,229	5,671
GRAND TOTAL	102,780	330,874	2473	94,761	575,533	6,765	197,541	906,407	9,238

*Wild and cultivated Ribes

TABLE # 4 - SHEET # 1
SUMMARY OF ALL OTHER CONTROL WORK FOR 1942

State	CULTIVATED BLACK CURRANT ERADICATION				NURSERY SANITATION				MAPPING COMPOUND AREAS		
	No. Inspections Made	No. Locations Found	No. Black Curranths Destroyed	No. Black Curranths in Nurseries Worked	No. Wild Acres and Cult. Worked	No. 8-Hour Days	No. Acres Mapped	No. Days	No. Acres	No. Days	No. Acres
Georgia	-	-	-	-	-	-	21,291	-	21,291	-	21,291
N. C.	-	-	-	-	50,000	439	15,401	6	15,401	-	15,401
Tenn.	-	-	-	-	-	-	50,000	-	50,000	-	50,000
Va.	-	-	-	-	-	-	50,000	-	50,000	-	50,000
W. Va.	-	-	-	-	150,000	633	11,273	16	11,273	-	11,273
TOTAL	-	-	-	-	1,072	1,072	107	22	107	-	107

(1) Includes nursery

TABLE # 4, SHEET # 2
SUMMARY OF ALL OTHER CONTROL WORK FOR 1942

State	TREATMENT OF INFECTED WHITE PINES				CHECKING			
	Total Number Pines Examined	Number Infected Pines Cut Down	Number Pines From Which Cankers Removed	Number Cankers Removed	Advance Number Checked	Post Number Checked	8-Hour Man Days	8-Hour Man Days
Georgia	-	-	-	-	507.5	-	-	15,500
N. C.	-	-	-	-	24.8	112.44	400	1,500
Tenn.	-	-	-	-	-	423.00	143	389.53
Va.	-	-	-	-	-	1220.75	292	53.00
W. Va.	-	-	-	-	506.1	882.50	376	207.15
TOTAL	-	-	-	-	1052.2	155	1211	70.00

(1) Charged to eradication

TABLE #1A, SHEET #1
SUMMARY OF ALL RIBES ERADICATION 1918 - 1942 (INCLUSIVE)

INITIAL ERADICATION WORK					REERADICATION WORK				
STATE	Gross Acreage Reported Initially Worked	Net Acreage in Control Area	Number Wild and Cult. Ribes Destroyed	8-Hour Man Days	Gross Acreage Reported Reworked	Net Acreage Reworked in Control Area	Number Wild and Cult. Ribes Destroyed	8-Hour Man Days	
a	b	c	d	e	f	g	h	i	
Del.	4,267	4,267	3,677	253	-	-	115	-	5
D. C.	1,875	1,875	-	-	-	-	-	-	-
Ga.	961,645	927,368	5,227,773	24,328	13,011	13,011	321,903	2,320	15
Ky.	80,565	80,565	3,925	837	785	785	16	-	-
Md.	175,953	172,512	3,111,774	12,788	57,956	37,405	602,641	9,344	10
N. C.	1,647,604	1,639,037	2,339,118	43,549	1,653,858	58,159	310,517	10,182	182
S. C.	29,635	29,635	7,129	1,245	1,045	1,045	358	-	-
Tenn.	1,084,250	1,084,250	5,661,352	41,615	74,945	74,945	283,509	3,642	10
Va.	700,812	700,812	5,499,135	60,911	144,945	144,945	2,555,367	29,747	10
W. Va.	790,889	790,889	5,053,351	11,504	11,031	11,031	253,222	3,050	10
TOTAL	4,477,495	5,431,210	26,907,234	227,122	2,088,479	472,229	5,028,417	65,000	10

(1) Worked by Agent, Charged to supervision. Some adjustments have been made to agree with Permanent Control Record.

TABLE #1A - SHEET #2
SUMMARY OF ALL RIBES ERADICATION 1918 - 1942 (INCLUSIVE)

INITIAL AND REERADICATION					PER ACRE				
STATE	Gross Initial and Reworked Acreage Reported	Net Acreage Initial and Rework	Number Ribes Destroyed Wild and Cult. Only	8-Hour Man-Days	Ribes Initial Erad.	Ribes Re-Erad.	Man Days Initial Erad.	Man Days Re-Erad.	
Del.	4,267	4,267	3,771	268	0.86	-	0.06	-	
D. C.	1,875	1,875	-	-	-	-	-	-	
Ga.	974,656	940,379	245,794	26,648	5.43	24.74	0.03	0.18	
Ky.	81,350	81,350	1,837	837	.05	.02	0.01	-. (2)	
Md.	233,909	209,917	7,851	22,132	17.69	10.40	0.07	0.16	
N. C.	3,301,462	1,697,106	674,511	53,714	1.43	0.19	0.03	0.06	
S. C.	30,680	30,680	7,487	1,427	0.24	0.34	0.04	0.05	
Tenn.	1,159,195	1,159,195	282,436	45,264	5.22	3.78	0.04	0.05	
Va.	845,757	845,757	59,672	90,658	7.85	17.63	0.09	0.21	
W. Va.	932,823	932,823	21,966	51,246	6.39	6.72	0.05	0.07	
TOTAL	7,565,974	5,903,439	31,935,651	292,194	4.91	2.41	0.04	0.03	

(1) These are based on gross acreage figures. (2) Worked by Agent, charged to supervision. Some adjustments have been made to agree with Permanent Control Records.

TABLE #2A - SHEET #1
STATUS OF BLISTER RUST CONTROL 1918 - 1942 (INCLUSIVE)

STATE	Acreage of White Pine Control Area	Acreage of Net Control Area (White pine and Protection Zones)	Acreage of Net Control Area	Acreage of Net Control Area		Initially Worked 1st Rework Reworkings	Percentage Net Control Area Initially Worked	Acreage in Net Control		Acreage in Net Control Area Now on Maintenance Basis
				Reworked	Other			Area Still Needing Initial Protection	Area Still Needing Initial Protection	
Del.	194	4,267	-	-	-	100.00	-	-	4,267	
D. C.	25	1,875	-	-	-	100.00	-	-	1,875	
Ga.	553,000	950,000	13,011	-	-	97.64	1.37	22,632	900,000	
Ky.	62,417	80,565	785	-	-	100.00	0.97	-	80,565	
Md.	72,971	174,921	28,405	9,000	-	98.60	16.23	2,409	154,589	
N. C.	704,748	1,640,080	58,065	94	-	99.90	3.50	1,043	1,623,259	
S. C.	15,137	29,635	1,045	-	-	100.00	3.50	-	29,635	
Tenn.	633,069	1,132,023	74,945	-	-	95.80	6.60	47,773	1,000,000	
Va.	268,550	723,927	120,397	24,518	-	96.70	16.60	23,115	400,000	
W. Va.	295,000	800,000	141,934	-	-	98.80	17.70	9,111	554,555	
TOTAL	2,605,111	5,537,293	438,587	33,642	-	98.00	7.9	106,083	4,742,543	

Some adjustments have been made in the figures to agree with Permanent Control Records.

SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1918 - 1942 (INCLUSIVE) (1)
(Initial and Reeradication)

REGULAR AND COOPERATIVE

W. P. A. AND E. R. A.

State	Acreage Worked	Number Wild & Cultivated Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Wild and Cultivated Ribes Destroyed	Number 8-Hour Man-Days
Del.	7	241	12	14,260	3,551	25
D. C.	1,875	-	-(2)	-	-	-
Ca.	25,925	9,752	560	757,243	5,514,671	25,304
Ky.	18,210	16	-(2)	1,617	-	-(2)
Md.	2,933	161,654	439	83,105	1,773,331(2)	13,232
N. C.	56,979	52,065	632	2,173,101	2,358,603	46,037
S. C.	3,145	12	12	4,050	556	596
Tenn.	-	-	-	975,731	5,664,617	42,512
Va.	14,516	153,120	1,380	584,579	5,182,680	40,111
W. Va.	63,331	121,710	1,559	736,082	4,822,741	37,655
TOTAL	218,951	498,570	4,594	5,312,091	25,391,752	225,932

(1) Some adjustments have been made in order to agree with Permanent Control Records (2) Agent's work.

TABLE #3A SHEET #2

SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1913 - 1942 (INCLUSIVE)
(Initial and Reeradication)

C. C. C. and S. C. C.

P. W. A. and E. R. A.

Total Eradication Program

W. P. A. and E. R. A.

State	Acreage Worked	Number Wild & Cultivated Ribes Destroyed	Number 8-Hour Man Days	Acreage Worked	Number Wild and Cultivated 8-Hour Man-Days	Acreage Wild & Cult. Ribes Destroyed	Number 8-Hour Man-Days
Del.	-	-	-	-	-	3,951	-
D. C.	-	-	-	-	-	-	-
Ga.	15,493	235	51	175,695	733	948,731	5,539,924
Ky.	-	-	-	61,525	637	63,140	3,925
Md.	20,435	586,051	4,812	127,436	3,589	250,976	3,552,761
N. C.	166,199	88,091	3,094	905,183	3,951	3,244,483	2,597,570
S. C.	888	-	21	22,597	798	27,535	7,415
Tenn.	61,094	111,635	1,847	122,340	1,439	1,239,121	5,944,861
Va.	69,239	1,976,425	23,395	124,400	5,471	799,211	7,901,382
W. Va.	87,365	647,157	9,622	46,045	2,410	869,492	5,885,632
TOTAL	440,713	3,409,594	42,840	1,585,219	19,228	7,511,023	31,437,081

267,691

TABLE #4A SHEET #1
SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP 1918 - 1942 (INCLUSIVE)

Land Ownership:	Acreage of White Pine in Net Control Area (Wp. + Prot. Zones)	INITIAL ERADICATION			
		NET CONTROL AREA		INITIAL ERADICATION	
		Total Acreage	Gross Acreage Reported	Net Acreage Worked	Gross Number Wild & Cultiv. 8-Hour Man-Days
National Forests	647,473	1,237,517	52,249	1,215,330	8,657,323
O&C Revested Lands	-	-	-	-	-
Other Public Domain	-	-	-	-	-
National Parks	72,668	128,341	128,341	128,341	1,741,169
Indian Reserv.	17	345	345	345	15,001
SUBTOTAL (FEDERAL)	720,158	1,366,203	52,249	1,313,954	83,000
State & Private	1834,950	4,171,090	53,834	4,117,256	16,528,712
GRAND TOTAL	2,605,108	5,537,293	106,083	5,431,210	227,122

TABLE #4A SHEET #2
SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP - 1918 - 1942 (INCLUSIVE)

REERADICATION WORK				TOTALS (INITIAL & REWORK)			
Land Ownership	Gross Acreage	Net Acreage	Gross Number	Gross Initial and Reworked Acreage	Initial and Rework	Gross No. Wild & Cult. 8-Hour	
	Reported	Reworked	8-Hour	Reported		Ribes Destroyed M. D.	
		Control Area	Man-Days				
National Forests	257,463	129,470	17,938	1,472,793	1,314,738	10,257,793	
O&C Revested Lands	-	-	-	-	-	-	
Other Public Domain	-	-	-	-	-	-	
National Parks	27,615	19,583	10,591	155,956	147,924	2,559,272	
Indian Reservations	-	-	-	345	345	-	
SUBTOTAL (FEDERAL)	285,078	149,053	28,529	1,629,094	1,463,007	12,817,065	
State & Private	1,803,401	323,176	36,543	5,936,880	4,410,432	19,118,586	
GRAND TOTAL	2,088,479	472,229	65,072	7,565,974	5,903,439	31,935,651	

CULTIVATED BLACK CURRANT ERADICATION

State	Number Inspections Made	Number Locations Found	Number Black Currants Destroyed	Number 8-Hour Man-Days	Number of Nurseries ; Number Acres Worked				Number Wild & Cult Ribes Destroyed	Number 8-Hour Man- Days
					Sanita- tion Zones Maintained	Sanita- tion Zones Abandoned	Nurseries Which Maintain- ing Zones	Nurseries Which Abandoned Zones		
Del.	-	-	-	-	2	5	700	1,300	2,000	92
D. C.	-	-	-	-	-	-	-	-	-	-
Ga.	19	19	1,126	20.00	-	1	-	179	179	8
Ky.	-	-	-	-	1	-	200	-	200	24
Md.	25	25	2,211	No data	7	-	1,180	3,032	7,212	12,195
N. C.	2	2	3	0.25	20	4	5,529(1)	576	6,105	2,394
S. C.	-	-	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	3	-	1,202	-	1,202	14
Va.	21	21	10	0.25	10	-	2,000	-	2,000	22
W. Va.	1	1	-	0.50	2	-	768	-	768	74
TOTAL	71	72	3,350	21.00	45	16	14,592	5,087	19,680	1,112

(1) Charged to supervision.

SUMMARY OF ALL OTHER CONTROL WORK, 1918 - 1942 (INCLUSIVE)

MAPPING CONTROL AREAS

State	No. Acres Mapped (White Pine and Protection Zones)	Number 8-Hour Man-Days	Total Number Pines Examined	Number Infected Pines Cut Down	No. Infected ;			Number Cankers Removed	Number 8-Hour Man-Days
					Pines From Which Cankers Removed	Branch Removed	Stem Removed		
Del.	4,267	449	-	-	-	-	-	-	-
D. C.	1,875	-	-	-	-	-	-	-	-
Ga.	961,645	12,206	-	-	-	-	-	-	-
Ky.	80,565	-	-	-	-	-	-	-	-
Md.	203,191	2,051	139,354	270	5,033	14,074	651	521	-
N. C.	161,016	32,381	-	-	-	-	-	-	-
S. C.	29,635	4	-	-	-	-	-	-	-
Tenn.	1194,919	34,822	-	-	-	-	-	-	-
Va.	807,730	16,231	643,095	5,292	26,761	165,752	4,482	3,089	-
W. Va.	834,342	18,860	-	-	-	-	-	-	-
TOTAL	5758,333	117,036	782,449	5,550	31,794	179,826	5,133	4,016	-

TREATMENT OF INFECTED WHITE PINES

II G Finances

Funds to the amount of \$30,378.25 were expended from this project (3101) during the calendar year for 1942. These funds enabled the employment of supervisory personnel and all clerical assistance in the regional office at Richmond and provided for office and travel expenses of the key personnel therein. In addition, 36.77% of the supervisory personnel including State leaders were employed under this project, as well as four clerks in State leaders' offices for part time.

Omnibus Tables on Finances for all blister rust control work in the region for 1942 and 1918-42 will be found on the following pages, including Table #5, Sheet #1 for 1942 expenses, and cumulative figures for all years in Table 6A, Sheets 1 and 2. Omnibus Table #5, Sheet #2 is found broken up in this report as follows:

BLR-1 - Leadership, Coordination and Technical Direction, below on page II G-1.

BLR-3 - Cooperative Blister Rust Control on State and Privately-Owned Lands on page III G-1.

BLR-4 - Forest Service on page IV F-2.

BLR-5 - National Parks on page V F-2.

BLR-7 - Indian Lands - None in 1942.

EXTRACT FROM TABLE #5, SHEET #2 SUMMARY OF EXPENDITURES FOR 1942

FINANCIAL PROJECTS				
BLR-1 - Leadership, Coordination and Technical Direction				
State	Indirect Aid State*	Federal Regular	Emergency	Total
Georgia	\$636.00	\$4,054.32	-	\$4,690.32
Kentucky	-	-	-	-
Maryland	1,062.00	2,421.17	-	3,483.17
North Carolina	1,577.44	5,511.12	\$5,072.99	12,161.55
Tennessee	479.62	5,111.28	4,049.22	9,640.12
Virginia	1,461.39	5,856.42	2,840.04	10,157.85
West Virginia	820.00	7,420.94	487.50	8,728.44
TOTAL	\$6,036.45	\$30,378.25	\$12,449.75	\$48,864.45

*Including all local cooperative funds.

TABLE #5 SHEET # 1
SUMMARY OF EXPENDITURES FOR 1944

TOTAL					RECAPITULATION OF FEDERAL FUNDS				
State (All Agencies including State WPA Projects)	Federal State (Including WPA Projects)	Coop. Funds	GRAND TOTAL	Regular Funds	Department of Interior				Emergency Funds
					Indian Regular State Funds	Indian Regular State W.F.A. Funds	Indian Regular State W.F.A. Funds	Indian Regular State W.F.A. Funds	
Ga.	8,191.97	4,453.51	13,245.48	4,054.32	4,734.65	-	-	8,791.97	-
Ky.	(1)	-	-	-	-	-	-	-	-
Me.	2,124.17	1,062.00	3,186.17	2,124.17	-	-	-	2,124.17	-
N. C.	22,217.49	6,776.22	28,993.71	5,511.12	1,816.07	2.00	-	7,329.19	14,368.91
Tenn.	18,677.60	2,184.12	20,861.72	5,111.28	221.25	-	-	5,332.53	13,345.07
W. Va.	28,810.81	2,213.12	31,023.93	5,856.42	1,257.78	355.00	-	16,109.11	12,701.70
TOTAL	78,007.00	19,700.00	97,707.00	21,450.74	7,029.70	357.00	-	27,557.92	42,973.61

(1) Actual expenditures of Mr. Vest for salary and travel in Kentucky, \$106.16 charged to Va., where he was State leader

SUMMARY OF ALL EXPENDITURES, 1948 - 1942 (INCLUSIVE)

RECAPITULATION OF REGULAR FUNDS					RECAPITULATION OF REGULAR FUNDS				
State (All Agencies including WPA Projects)	Federal State (Including WPA Projects)	Coop. Funds	GRAND TOTAL	Regular Funds	Department of Interior				Emergency Funds
					Indian Regular State Funds	Indian Regular State W.F.A. Funds	Indian Regular State W.F.A. Funds	Indian Regular State W.F.A. Funds	
Del.	4,715.43	949.20	5,664.63	293.20	-	-	-	-	-
D. C.	39.96	-	39.96	-	-	-	-	-	-
Ga.	133,936.20	19,339.70	153,275.90	9,883.80	-	-	-	-	-
Ky.	7,810.11	290.00	8,100.11	1,570.33	-	-	-	-	-
Md.	122,628.33	12,928.35	135,556.68	14,172.62	-	-	-	-	-
N. C.	332,456.79	25,551.53	358,008.32	11,921.57	68.50	-	-	-	-
S. C.	7,811.10	610.00	8,421.10	80.00	-	-	-	-	-
Tenn.	232,635.85	21,848.82	254,484.67	10,973.77	-	-	-	-	-
Va.	450,137.70	9,474.29	459,611.99	63,269.72	9,794.57	705.00	-	-	-
W. Va.	310,645.30	6,637.57	317,282.87	16,267.63	1,178.59	-	-	-	-
TOTAL	1,602,817.07	103,429.52	1,706,246.59	128,472.60	11,041.66	705.00	-	-	-

TABLE "6A. SHEET #2
SUMMARY OF ALL EXPENDITURES 1918 - 1942 (INCLUSIVE)

RECAPITULATION OF EMERGENCY FUNDS									
Federal W. P. A.			State	C. C. C. and S. C. S.		P. W. A.		GWA, ARA, ERA, NYA, & C. C. Camps	Grand Total
(1) Bureau Serv.	Dept. Int.	(1) Total	(All Bureau)	Forest Serv. & State Camps	Dept. Interior	Total	Bureau Serv.	For.	
Del.	4422.23	-	-	-	-	-	-	-	4422.23
D. C.	-	-	-	-	-	-	-	-	-
Ga.	116312.31	-	-	-	-	281.66	7343.53	114.90	120002.10
Ky.	-	-	-	-	-	-	6239.78	-	6239.78
Md.	78842.75	-	-	6,995.75	-	6,995.75	22165.91	451.30	100155.71
N.C.	188978.89	-	9431.17	5,776.35	3,271.46	9,037.81	27307.10	3711.75	320156.10
S.C.	1876.91	-	-	43.04	-	43.04	5811.45	-	7711.40
Tenn.	154773.16	-	-	46753.71	253.00	1,111.91	12871.12	122.15	221655.04
Va.	225768.03	-	(4)60243.98	9,603.25	43,899.92	53,509.17	35583.49	1271.71	57821.00
W.Va.	215563.17	-	(4)33821.04	25,949.37	-	25,949.37	17865.50	-	29371.00
TOTAL	986529.45	-	232249.93	55,534.33	47,424.38	102,958.71	135187.88	5571.81	1141112.00

(1) While no Federal W. P. A. project has been carried on in 1942, a few expenditures made in 1941 were not paid until 1942. The cumulative figures through 1941 have been adjusted to care for this increase as well as for the removal of all W. P. A. expenditures, the latter now appearing in column A.

(2) This represents an increase of \$399.86 in North Carolina due to an error of omission in 1940.

(3) This represents an increase of \$2022.97 in Virginia due to an error of omission in previous years.

(4) Corrections have been made in grand totals for State WPA for Va. and West Va., because of errors in previous years figures.

III Cooperative Control on State and Federal Lands

A. The objectives are indicated in the heading.

B. Cooperators

1. Cooperation consists of cash allotments or appropriations by the several States of Georgia, Maryland, North Carolina, Tennessee, Virginia and West Virginia; also allotment or loan of rooms for offices and storage space by county and city authorities, purchase and loan of equipment for use in office and field, services of the cooperators, etc.

2. Cooperative Agreements are in effect with the above-mentioned six states. They are being continued in force each year, the original agreement having been made several years ago.

C. Organization of Control Work

The control and survey work is being handled by the organization shown under preceding work project II C. The actual work is conducted by Agents working under the immediate supervision (if Agents are new) or under the general supervision (if agents are experienced) of the State leaders. Each agent has foremen, perhaps sub-foremen, and crew men who actually survey the pine land and eradicate the ribes found.

D. Work Accomplished

1. Ribes Eradication. In Maryland, work was carried on in Garrett County to a very small degree, no allotment being made by the State of Maryland. Only 123 acres were covered (reworked) in Garrett County in 1942 and 1,854 wild ribes destroyed.

In North Carolina, local control was carried on in Buncombe, Haywood, Jackson, Madison, Mitchell, Watauga, and Yancey Counties. Ribes bushes were found in quantity, that is, over 50 bushes, only in Haywood and Watauga Counties. A few cultivated bushes were pulled in Buncombe, Jackson and Madison Counties. Over 99% of the 185,667 ribes pulled on State and private land were pulled in Watauga County on 5,636 acres, an average of 33 bushes per acre worked.

In Tennessee, local control was carried on in Blount and Rhea Counties in the Cumberland Mountains and in Carter, Johnson and Sullivan Counties in the eastern mountain area. While 44,000 acres out of 50,000 acres were classed as initial work yet more ribes were pulled in rework (38,257) than in initial work (35,962). Ribes in initial work averaged but 0.81 per acre and in rework 6.5 bushes per acre.

In Virginia, only a small acreage was covered in 1942, viz., 12,817 acres in Augusta, Bath, Madison and Rockbridge Counties. All but 721 acres were rework. The heaviest ribes per acre was found in Bath County rework; 15 bushes per acre and in Madison County rework with 13.5 bushes per acre. Rework in Augusta County showed but 0.96 bushes per acre and in Rockbridge County 0.35 bushes per acre. The low figure for Augusta County is accounted for by the fact that this was the third working of some areas. A series of dry years have also aided us in keeping ribes suppressed. The initial work in Bath County in 1942 gave only six bushes per acre on 721 acres covered.

In West Virginia, initial eradication work was carried on in Greenbrier, Monroe, Pendleton, Pocahontas and Summers Counties. Only 1,769 acres or 7.9% of initial acreage out of a total of 22,379 acres were ribes-bearing. Reeradication was carried on in Mercer, Pendleton and Pocahontas Counties, over 90% being in Pendleton County.

III D-1 (Continued)

16,616 out of 38,907 acres of rework were ribes-bearing. Ribes per acre in initial work varied from 0.4 for Greenbrier County to 16.3 for Pocahontas County, 27.3 for Monroe County, 33.5 for Summers County and 59.4 for Pendleton County. For rework the ribes per acre varied from 4.8 for Pendleton County, 12.5 for Pocahontas and 14.1 for Mercer County.

The figures for ribes-bearing acreage for each State except Virginia are being reduced by more accurate surveys each year. In Virginia, the surveys are turning up more pine and control acreage, some of which bear ribes.

Summarizing the eradication on State and private lands for 1942 for the region, we find that our accomplishments were only about one-third those of the preceding calendar year, due to a curtailment of emergency funds. Data for years 1940 to 1942 follow, for purposes of comparison.

Year	Total Acreage Worked	No. Ribes Destroyed	No. 8-Hour Man-Days	Average No. Acres Worked Per Man Day
1942	144,173	451,229	5,671	25
1941	429,801	1,459,270	17,665	24
1940	372,991	1,341,102	9,582	39

Cumulative totals for all years 1918 - 1942 inclusive follow:

Gross Acreage reported worked	5,936,880
Net Acreage worked	4,440,432
No. Ribes removed	19,118,586
No. Man Days work	180,576
Average No. of acres worked per man day	33

III D 2 Pine Surveys

Cumulative figures through 1942, revised to accord with Permanent Control Records show a decrease in the estimated amount of white pine worth protecting from 1,948,336 acres in 1941 to 1,884,950 acres in 1942 but an increase in the estimated control acreage from 4,077,336 acres in 1941 to 4,171,090 acres in 1942. Of this control acreage 98.7% has been initially protected.

Some surveys remain to be completed in Monroe and Polk Counties in southeastern Tennessee, and in Virginia and West Virginia, and it is not improbable that the pine acreage and control acreage may be increased.

Lumbering is being carried on with increasing vigor on private lands, for the market for white pine saw timber and the prices paid for stumpage are very good. We may see a decrease in pine acreage for a few years if pine lots are clear cut. On the other hand, white pines are being planted on an increased scale on both private and State lands, particularly in North Carolina and Tennessee owing to activity of the T. V. A., the Soil Conservation Service, the Extension Foresters and the State Foresters.

III D 3 Canker Elimination

No canker elimination was carried on in 1942. However in previous years, considerable work of this nature was carried on on State land in Garrett County, Maryland. The cumulative record through 1942 for canker elimination in Maryland follows:

III D-3 Canker Elimination (Continued)

No. of Infected trees cut down.....	253
No. of Infected Pines from which cankers were removed.....	5,033
No. of Cankers removed	
Branch.....	14,074
Stem.....	651
No. of 8-Hour Man Days.....	927

III D 4 Checking

Mr. Ball's summarization of checking data appears under paragraph II D 2. No separate tables are available for checking on State and private lands.

III D 5 Infection Conditions in 1942

Infection conditions on pine remains about the same as in 1941, but infections on ribes were absent in the newly infected counties of 1941 in Virginia, West Virginia, North Carolina and Tennessee, as far as could be learned by general scouting.

In Virginia, blister rust on pine was found in 1942 for the first time in Alleghany, Montgomery and Roanoke Counties, and on ribes only in Amherst and Craig Counties. For information on the names of the 26 Virginia counties in which blister rust has been located and the year of discovery refer to Mr. Yost's Annual Report for Virginia for 1942.

While no pine infection counties are available for 1942, there are records available of the two preceding years for 13 privately owned pine areas, where the number of pines examined ranged from 50 to 150 trees. In these areas we find the following percentages of infected trees:

Page County 1.4 and 4
Bath County, 3.3; 12; 12.3; 14.6 and 18.4
Highland County, 8, 16, 22, 24, 24.6 and 29

In West Virginia, the blister rust was located on the Seneca State Forest in Pocahontas County, and found to have infected at least 5% of the pines on 80 acres in Thorny Creek. Over the Forest as a whole, 3% of the pines were infected. A study plot of pine infection, north of Durbin in Pocahontas County on private land showed 30% of the white pines infected on a tenth-acre plot. The trees on the plot averaged 630 per acre. In other words, 19 pines out of 63 were infected on the tenth-acre. Probably this is as high as any plot of equal size on State and private land in West Virginia. In Pendleton County, infections were found on pine in the vicinity of Ruddle and Sugar Grove, and in Hardy County near the study plot in Whetzel Hollow. On Ribes, the infections were quite general in Pendleton and Pocahontas Counties, being up to 25% of the ribes observed on post checking, according to Mr. Welch in September. While no infections were located in the Watoga State Park and in Droop Mt. State Park, both in southern Pocahontas County, ribes were found infected in the Greenbrier State Forest on Kates Mt., though at some distance from white pines.

III D-5 Continued

Infestation conditions probably remain about the same in Maryland except that it is to be expected that more pines will be infested, since little eradication was carried on in 1942, and several years had elapsed since previous eradication work. For details see Maryland Annual Reports for previous years.

III D-6 Surveys

When blister rust control operations were first started in the Southern Appalachian Region no white pine surveys were made except for those areas containing wild ribes. The early surveys were made by the traverse system and plotted on map sheets, using various scales and legends. For other areas which were suspected for ribes but found to be free of the lumber no maps were made. The only acreage figures to have for such areas are white pine and protective zone estimates. The more or less haphazard methods of survey offered many difficulties, some of which were (1) Non-uniformity in scale and size of survey maps (2) large variation in legends used to show white pine, ribes, topographical features, etc. (3) inexperience on the part of the field men in the proper handling of surveying instruments, such as alignment, slope correction, improper chaining habits, errors in closing in traverse points, using poor, inadequate base angles, etc.

There is no need to infer of course that all of the traverse maps were poor. In fact, some of them were very good as early as 1925, were made by a man who had natural ability along these lines. The biggest problem however laid in those sections of the region where it was almost impossible to segregate one pine area from the next because of overlap of protective zones. This was the cause of much worry and as a result confused and inaccurate base line made no acreage figures between intermingled and overlapping pine areas.

The first real attempt at a system of survey was made in Tennessee when base lines of one or more miles were run in cardinal directions through the white pine growing sections. Mappers covered the area between the base lines, spacing their strips at designated intervals. During the survey, scouts looked for ribes and the mappers estimate the white pine, plotting in type lines as they went along.

In the fall of 1935 a start was made on a definite survey system which has eventually brought more or less uniformity throughout the region. This system has been called the grid system. Under this system county maps were lined off in mile square units with 48 grids grouped into a 6x8 block. The field grid map is made to a scale of eight inches to the mile, using a uniform legend for timber types, ribes areas and topographical and cultural features throughout. After the grid system is laid out on the base map, established tie-in points such as bench marks, Forest Service corners, regulation points, etc., are located in the field with respect to the base map scale. Base lines are run in the field with the standard Forest Service staff compass and altimeter chain. Strip tie-in points are set every five chains along the base lines. The mapper who takes his distance between strip stakes takes white pine and ribes counts. Usually only 8 mile-long strips are run in a grid. The strips are 1/2 mile wide. This gives us a 2 1/2 percent estimate for each 640 acres covered. After the map is completed, the map is analyzed and summarized for white pine and ribes data. Protective zones are laid off on the maps and if ribes areas are found they are also laid out directly on the map. Within sections where ribes eradication is to be carried on, semi-permanent grid corners are established with grid corner posts set along roads and trails.

III D-2 Continued

With the grid system, each grid represents a work unit with all records of ribes eradication, checking and other pertinent data being kept by grids. Except in a few cases the old units are no longer regarded as a work unit. The grids thus eliminate the old system of records of overlapping pine work protective zones.

To see how the grid system works into our permanent control record system, refer to the section "Keeping of Master Records" page III D-3.

III E-1 Status of the Program

On State and Private lands through 1942, there was an estimated acreage of 1,884,250 acres with a total acreage of 4,170,000 acres. Of this, 4,117,256 or 98.7 percent had been given limited protection and in addition 323,176 acres or 7.7 percent had been reworked.

Ribes eradication in infected countries up to 1942 has kept ahead of the progress of the disease. In 1942, however, in the State of Maryland, because of lack of cooperative funds on the part of the State, the rust probably made headway in infecting pines, and it will continue to make headway, particularly in Garrett County if no eradication is carried on. While too little eradication is carried on,

Eradication on an adequate scale is being carried on on State and private lands in West Virginia, North Carolina, Tennessee and Georgia to prevent infection of white pines from becoming serious. This statement is based on the rough estimate of there being not over 20,000 acres of ribes-bearing land in each of the States of Georgia, North Carolina and Tennessee, the acreage of eradication and initial eradication carried on there in 1942, and the practical absence of the blister rust in these three Southern States. In West Virginia, the rust is widespread on ribes only in Pendleton and Pocahontas Counties. Reworking in these counties has been going on steadily and periodically on such a scale that the spread of the rust is very slow. In Pendleton County, Agent Fambler believes the existing infection on pine is not less than three trees per thousand. Since the rust is heaviest in the George Washington National Forest, my estimate of disease on private and State land is that it is less than one tree per thousand. In Pocahontas County, the rust on private and State land may be as low as one tree in ten thousand. In other words, it is difficult to find the rust on pine except in some few centers where it has been established for some five or eight years. The biennial appropriation of \$10,000 by the State, which has already been made by the Legislature, assures funds when equalled by Federal Funds, sufficient to work on the same scale, for two more years at least, as in the past year.

III E-1 (Continued)

In Virginia, the situation is not so favorable, due to the magnitude of the work (over a half million acres in the control area) and the abundance of ribes-bearing lands, equal probably to fifty percent of the total control acreage, or 250,000 acres, and the small appropriation or allotment for blister rust control by the State of Virginia for cooperation with the Federal Government. Only 36,223 acres were covered in 1942 by Regular and Cooperative Funds. This past calendar year, only \$752.03 was classed as expended as Direct Aid by the State of Virginia on this project. An increased amount, \$1,500 in all has been made available for the fiscal year ending June 30, 1943, by the Virginia Department of Agriculture. To adequately protect the pine in the ten counties showing pine infections, would cost at least \$5,000 per year. It is very important that in these counties periodic eradication be carried on. Of lesser importance at present is the work in the counties in which only ribes have been found diseased.

III E 2 Recommendations for the Future

It is recommended that surveys on State and Private land be continued as fast as possible to the end that we have more complete knowledge of the situation in each State, including the amount and location of the pine, and the location and extent of the ribes-bearing areas.

The information secured on the surveys and on the local control (Ribes eradication) should be added to the permanent control records. These records should be completed as soon as possible, not only for State and Private lands but for Federal lands.

It is recommended that work plans be made for the State and Private lands in each State, for at least a two year period so that we have a continuous picture of what and where blister rust control needs to be done.

It is recommended that ribes eradication be continued annually on State and Private lands in each of the six States of Georgia, Maryland, North Carolina, Tennessee, Virginia and West Virginia on a scale large enough to prevent any serious damage to the pines.

It is recommended that rust surveys be made regularly throughout the region to note the spread of the blister rust, both into new regions or counties and within the already infected stands, so that work plans will correlate the knowledge secured from the pine and rust surveys, and the knowledge of past ribes eradication.

TABLE #13 SUMMARY OF RIBES ERADICATION ON STATE & PRIVATE LANDS - 1942

State & Private Lands	INITIAL WORK				REERADICATION WORK				TOTALS			
	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days
Georgia	12,782	-	123	347	9,710	312	13,129	9,710	435			
Kentucky	-	-	-	-	-	-	-	-	-			
Maryland	-	-	-	123	1,854	52	123	1,854	52			
North Carolina	3,585	108,392	473	3,003	78,362	489	6,588	186,754	962			
Tennessee	44,344	35,962	502	5,886	38,257	993	50,230	74,219	1,495			
Virginia	721	4,243	145	12,096	33,296	871	12,817	37,539	1,016			
West Virginia	22,379	52,952	330	39,907	88,201	1,381	61,286	141,153	1,711			
TOTAL	83,811	201,549	1,573	60,362	249,680	4,098	144,173	451,229	5,671			

*Wild and Cultivated Ribes.

TABLE #14 SUMMARY OF RIBES ERADICATION ON STATE AND PRIVATE LANDS 1918-1942 (INCLUSIVE)

State & Private Lands		Acreage in		NET CONTROL AREA		INITIAL ERADICATION WORK	
	or Wildlife Refuge	Total Acreage*	(W.P. & Prot. Zones)	Acreage Not Yet Initially Worked	Gross Acreage Reported Initially Worked	Net Acreage Worked	Gross No. Wild & Cult. Ribes Destr.
Delaware	191	4,267	=	=	4,267	4,267	3,677
D. C.	25	1,875	=	=	1,875	=	=
Georgia	291,772	499,905	19,432	19,432	493,255	480,473	1,516,013
Kentucky	47,939	50,000	=	=	50,000	50,000	1,850
Maryland	72,971	174,921	2,409	2,409	175,953	172,512	3,111,774
North Carolina	594,903	1420,252	1,043	1,043	1419,209	1419,209	1,717,906
South Carolina	13,062	25,935	=	=	25,935	25,935	7,091
Tennessee	429,544	797,552	12,025	12,025	785,327	785,327	3,934,861
Virginia	186,663	525,000	13,990	13,990	511,010	511,010	2,013,455
West Virginia	244,877	671,583	4,935	4,935	666,648	666,648	4,222,195
TOTAL	1884,950	4471,090	53,834	53,834	4133,479	4117,256	16,528,742

*Column e = Column d and column f. (1) In D. C. Worked by Agent, charged to supervision. Some adjustments have been made in figures for Georgia, Kentucky, North Carolina and Tennessee to agree with Federal Control Records.

TABLE "4A" SHEET #8
SUMMARY OF RIBES ERADICATION ON STATE AND PRIVATE LANDS 1918-1942 (INCLUSIVE)

REERADICATION WORK					TOTALS (INITIAL & REWORK)			
STATE AND PRIVATE LANDS	Gross Acreage Reported	Net Acreage Reworked in Control Area	Gross Number Wild & Cult. Ribes Destroyed Max-Days	Gross No. 8-Hour & Reworked Acreage Reported	Initial Wild & Cult. Ribes Destroyed	Gross No. 8-Hour	Gross No. 8-Hour	
Del.	-	-	115	15	4,267	3,792	26	
D. C.	-	-	-	-	1,875	-	-	
Ga.	5,526 (2)	5,526	276,249	2,101	485,999	2,722,162	9,100	
Ky.	730	730	7	(1)	50,730	1,837	50	
Md.	57,956	37,405	602,644	9,344	233,909	3,714,415	22,132	
N. C.	1,511,788 (2)	52,114	247,106	8,543	2,930,997	1,965,012	39,525	
S. C.	620	620	358	172	26,555	7,449	1,364	
Tenn.	49,959	49,959	268,646	3,229	835,286	4,203,507	33,200	
Va.	52,503	52,503	372,140	4,375	563,513	2,385,575	33,111	
W. Va.	124,319	124,319	922,682	8,764	790,967	5,044,837	42,100	
TOTAL	1,803,401	323,176	2,589,644	36,543	4,440,432	19,118,586	180,576	

(1) In D. C. & Ky. worked by Agent - charged to supervision.

(2) Some adjustments have been made to agree with Department Control Records.

EXTENDED FROM TABLE 4A, SHEET #2, 1942

FINANCIAL PROJECTS				
BLR-3 - COOPERATIVE BLISTER MUST CONTROL ON STATE AND PRIVATELY-OWNED LANDS				
STATE	Direct Aid :	Federal	Emergency (1)	Total
	State	Regular		
Georgia	3,817.51	4,737.65	-	8,555.16
Kentucky	-	-	-	-
Maryland	-	-	-	-
North Carolina	5,123.78	1,816.07	9,825.31	16,830.16
Tennessee	1,704.80	221.25	9,295.85	11,221.90
Virginia	752.03	425.78	9,861.66	11,039.47
West Virginia	6,480.92	2,271.01	2,141.54	10,893.47
TOTAL	17,954.04	9,471.76	31,114.36	58,540.16

For Cumulative figures on State Expenditures. See Table 6A, Sheet 1 on page 11.

(1) Some Federal lands are included because all Emergency expenditures were placed under either BLR-1 or 2.

III G-1 Finances

The State of West Virginia through its legislature made \$10,000 available for blister rust control work for the biennium beginning July 1, 1942.

In North Carolina, the State Department of Agriculture continued its annual allotment of \$5,000 for blister rust control for fiscal years 1942 and 1943.

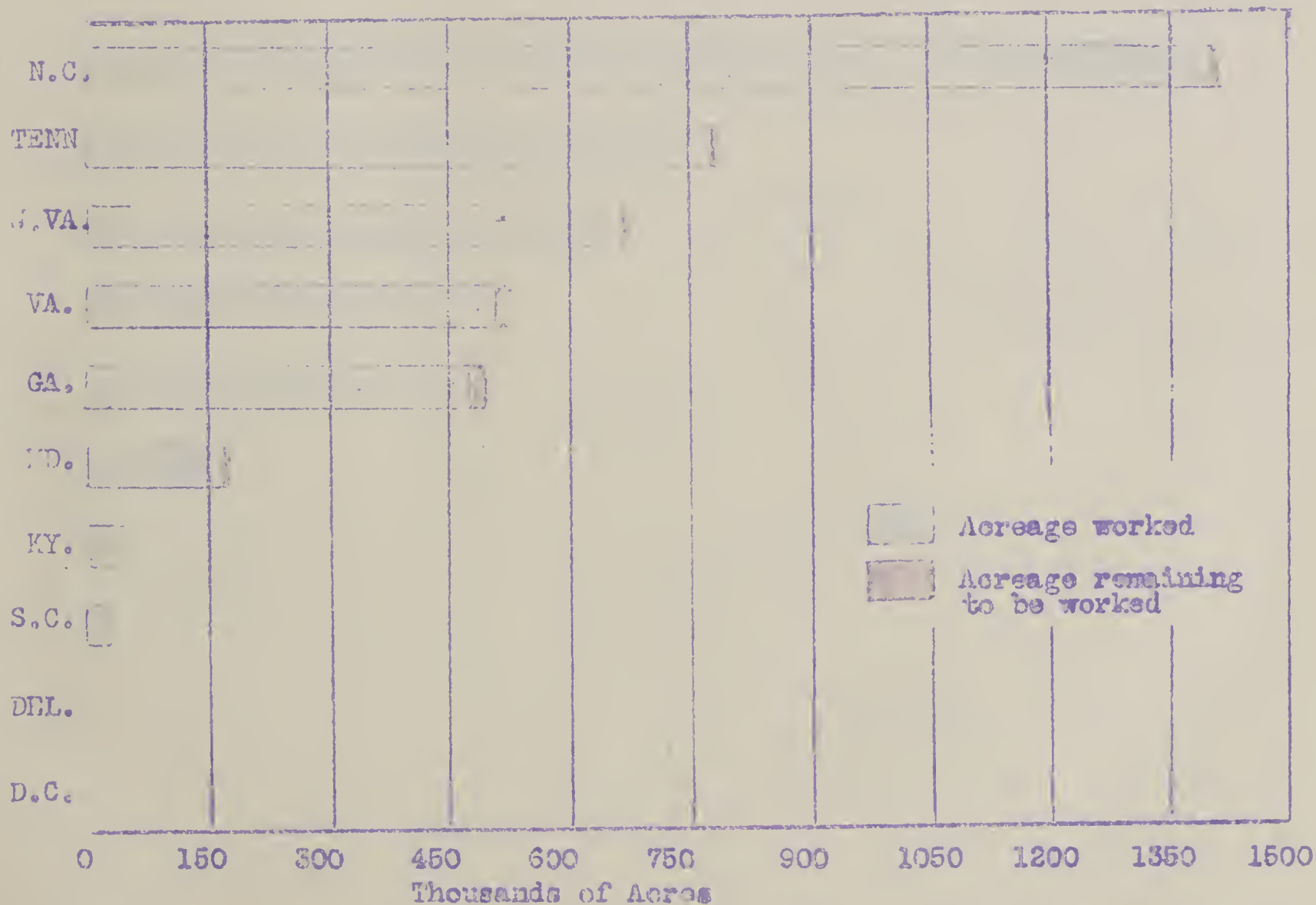
In Tennessee, the State Forester continued the allotment of \$2,000 per annum.

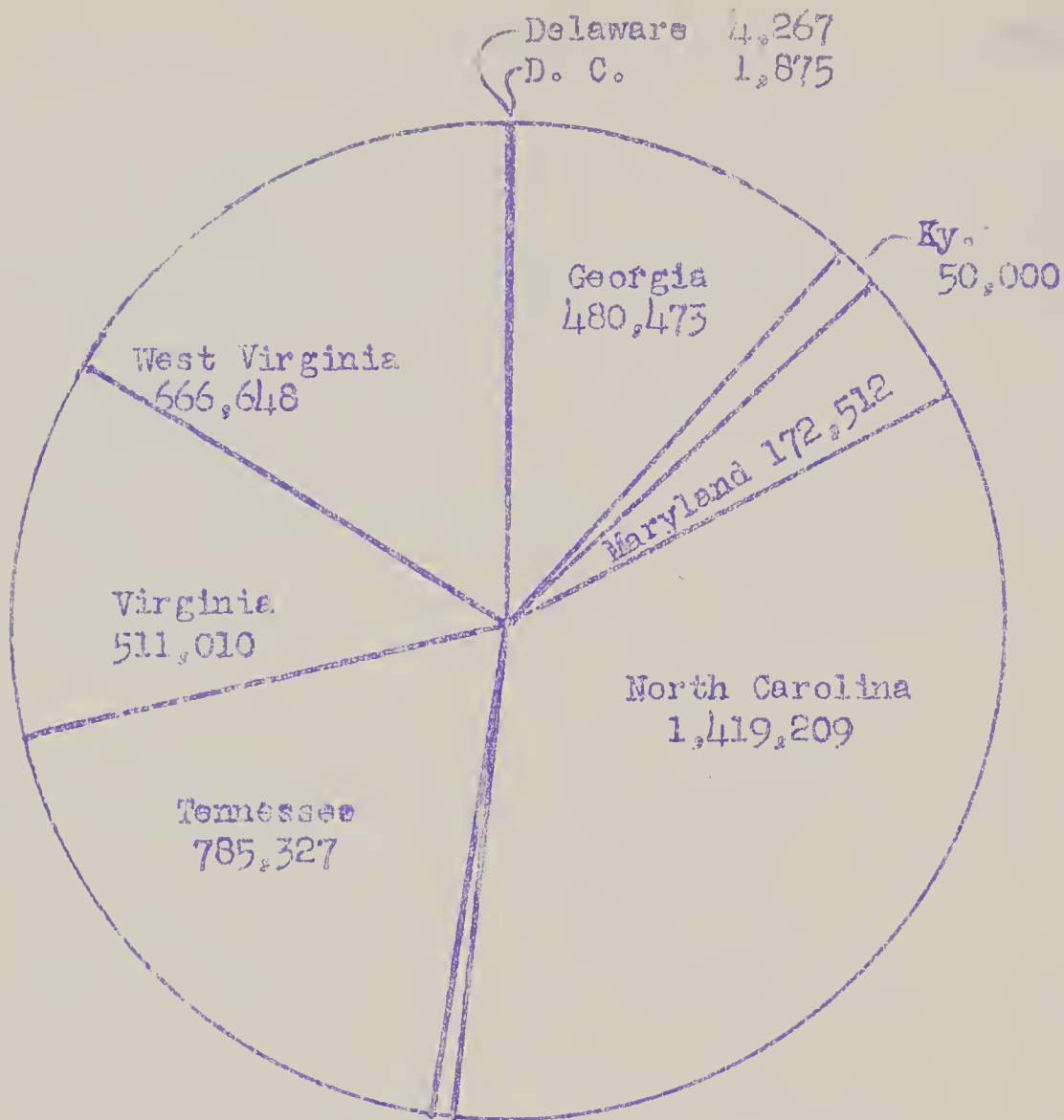
The Georgia State Entomologist made a cash allotment for control work and in addition furnished the services of several members of his office, the value of both amounting to \$3,817.

The Virginia Department of Agriculture expended \$752.00 during the calendar year.

Expenditures from these states for the calendar year 1942, classed as Direct Aid for ribes eradication, are to be found in Omnibus Table #5, Sheet #2, on page III F-3. Total expenditures from States for period 1918 to 1942 are to be found in Omnibus Table 6A, Sheet #1 on pages II G-1 and III F-3.

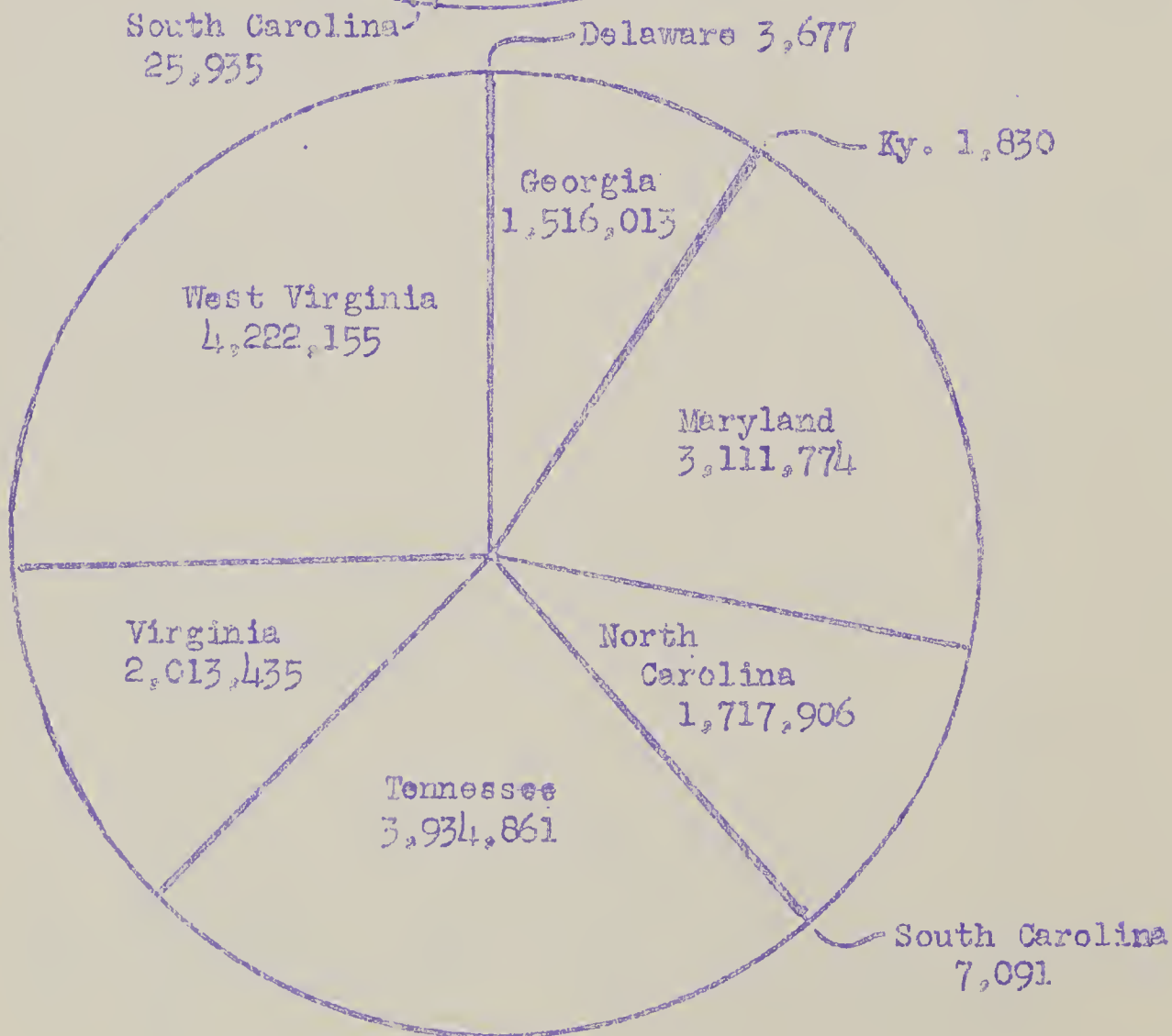
III H Graph Showing Comparative Acreage of State and Private Land in Control Areas, Worked Initially 1918 - 1942 Inclusive, and Unworked Acreage.





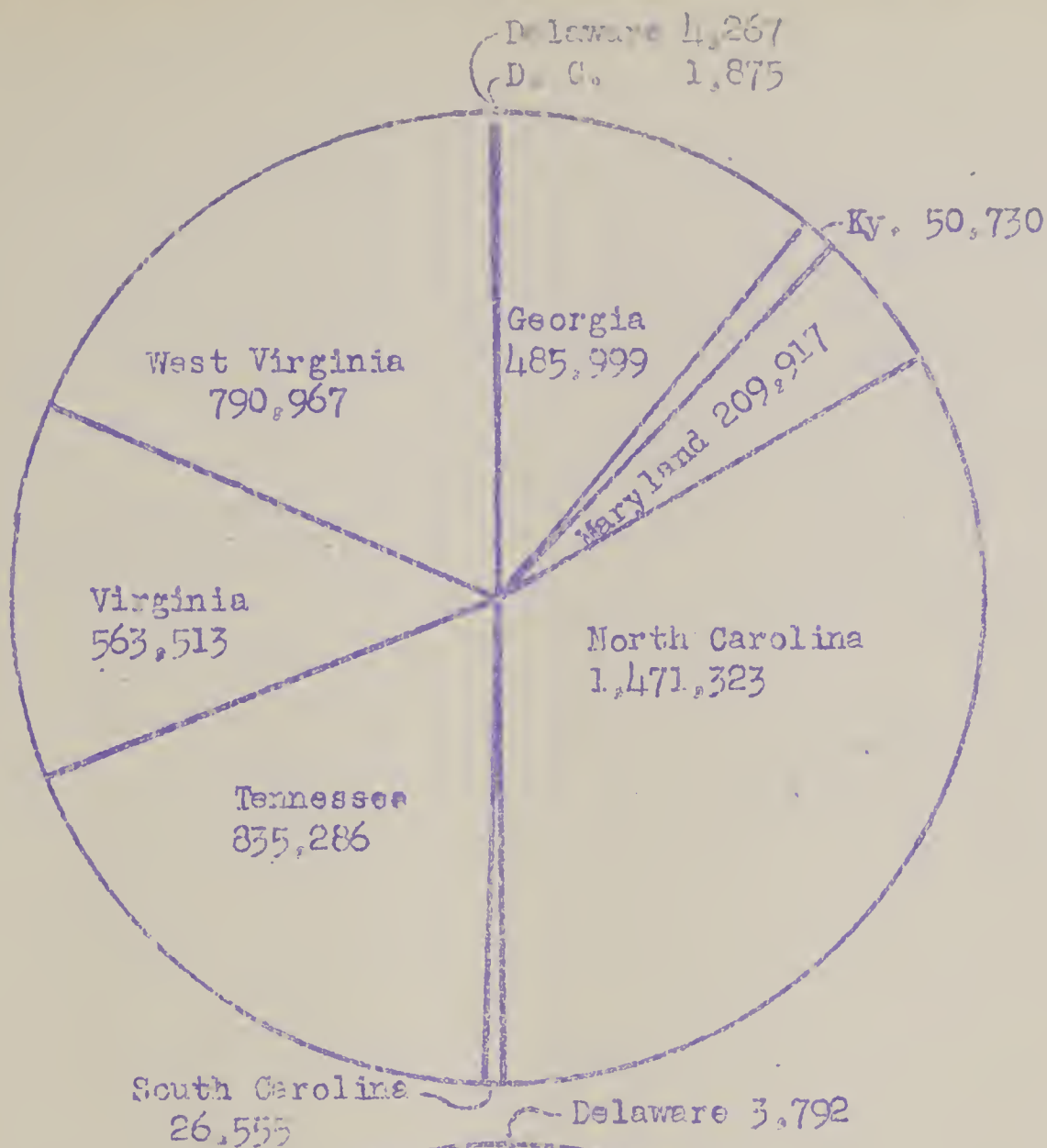
NET ACREAGE
INITIALLY WORKED

Total Acreage
4,117,256



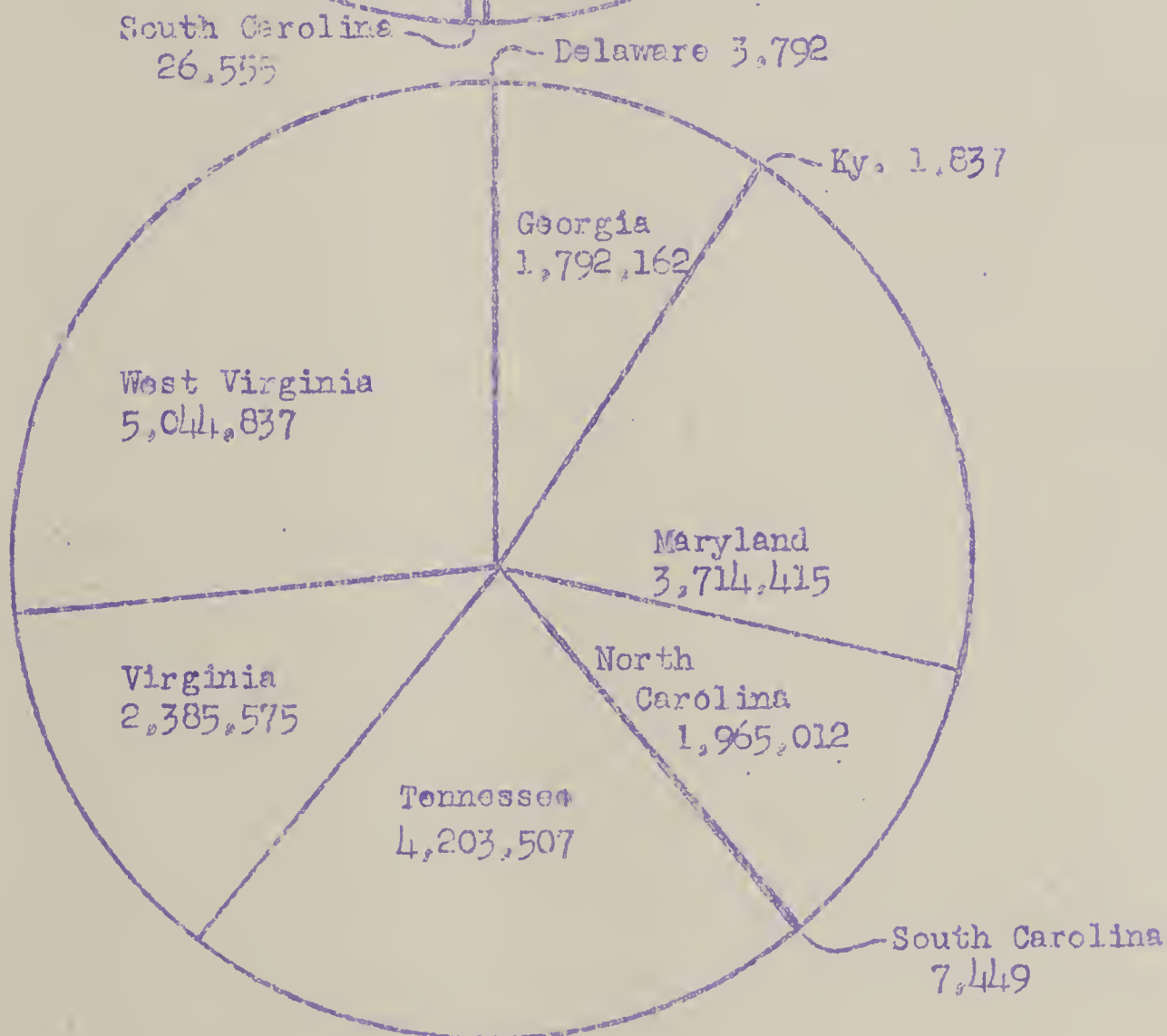
NUMBER OF WILD AND
CULTIVATED RIBES
DESTROYED

Total Ribes
Destroyed
16,528,742



NET ACREAGE WORKED
INITIAL AND REWORK

Total Acreage
4,440,432



NUMBER OF WILD AND
CULTIVATED RIBES DESTROYED

Total Ribes Destroyed
19,118,586

NATIONAL FORESTS

IV Blister Rust Control by the Forest Service, 1942

A. In the Southern Appalachian Blister Rust Control Region there are eight National Forests within the white pine control area. Located in Forest Service Regions 7 and 8. The following table lists by Forest Service Regions the National Forests included in blister rust control area in the Southern Appalachian Region.

National Forests in Southern Appalachian B. R. C. Region				
Forest	Supervisor	Acres Under	Percent of Acres	
Service National	Headquarters	F. S. Adminis-	in B. R. C.	
Region Forest	Forester	tration	2,314,42	
7	Regional Office - Philadelphia Pa	R. M. Davis		
George Washington	Harrisonburg Va.	A. C. Howard	920,627	19.5
Jefferson	Roanoke, Va.	A. R. Cochran	538,621	7.4
Monongahela	Elkins, W. Va.	A. A. Wood	804,725	3.9
Cumberland	Winchester Ky.	E. L. Borden	125,632	7.3
Total - Region 7			2,689,629	12.3
8	Regional Office - Atlanta, Ga.	J. C. Fletcher		
Chattahoochee	Cainesville Ga.	H. S. Redding	623,129	71.5
Savannah	Columbis, S. C.	E. M. Sears	315,338	1.1
Pisgah	Asheville, N.C.	H. F. Bosworth	464,953	31.8
Nantahala	Franklin, N. C.	Charles Mellicham	350,002	13.2
Cherokee	Cleveland, Tenn.	P.H. Garrard	547,483	47.0
Total-Region 8			2,306,916	39.2
Total - Regions 7 and 8			4,996,545	24.7

* Data from Earle H. Clapp's 1940 Report - "National Forests."

Since 1928 white pine blister rust control work has been carried on in all of the above national forests. Prior to 1933, however, most of the work done was in the form of a general reconnaissance by Mr. Roy G. Pierce and Forest Service Officials. In 1933, the CCC Emergency Program was started blister rust work was considerably expanded with general white pine surveys and ribes eradication being conducted on the George Washington, Pisgah, Unaka (now part of the Cherokee and Jefferson National Forests) and Nantahala National Forests.

Until July, 1942, there were no regular Forest Service blister rust projects. All such work from 1933 through June 1942 was carried on by CCC, WPA and other Emergency Programs. Following the closing down of all emergency projects the only course open for continuing control operations on the forests was to use regular funds, allotted to the Forest Service for this work. The first Forest Service project was started in July, 1942, on the George Washington National Forest in Virginia with an allotment of \$19,500 for the fiscal year 1943. A small amount of work was done on the Chattahoochee Forest in Georgia by Bureau crews working mainly on State and Private lands, including Forest Service lands only when intermingled with private holdings. Our last WPA project, which operated throughout the year in Tennessee did some work on the Cherokee Forest in the Watauga and Unaka Districts.

White Pine Rust Control by Forest Service (Continued)

White pine rust control on the forests in the earlier years consisted mainly in a general scouting for white pine and ribes. Where ribes were found growing in association with white pine they were pulled. Area maps were sometimes made but often they were lacking; and usually only a rough estimate of white pine acreage was provided to guide us in future control operations. Because of this fact a mile square grid survey was started in 1938 when all white pine would be mapped as the crews searched for ribes. This has not only given us a good picture of white pine conditions but it has also enabled us to definitely locate ribes areas in relation to the white pine. After the mapping proceeded for some time it was found that a number of the old ribes eradication areas were too far from white pine to warrant further working. Some new work areas were also brought into the picture when the crews located new ribes sites near white pine considered worthy of protection. Also because of the more systematic coverage white pine reproduction has been showing up extensively. Young white pine reproduction was often overlooked or underestimated in the old system of ocular estimation. Because it is the young white pine reproduction which is the most severely affected by the disease, we feel that these detailed surveys are justified; otherwise, a valuable potential white pine timber crop may never be realized in those sections where such reproduction is growing in association with wild ribes. We are fortunate, however, in that the surveys have turned up such large acreages of white pine which are naturally ribes-free.

Because of the curtailment of Emergency programs, white pine blister rust control work in the Southern Appalachian Region was reduced considerably on the national forests in 1942. However some work was done and the following pages give a brief summary of work done on each national forest during the calendar year.

KENTUCKY

1. CUMBERLAND NATIONAL FOREST
1942

Foreword

Surveys for pine, ribes and the blister rust were carried on in previous years, including intensive work in 1934 covering practically all pine areas in the central white pine area of Wolfe, Magoffin, Morgan and Lee Counties, and extensive work in 1937, 1938 and 1939 covering additional counties of Rowan, Jackson, Laurel, McCreary and Whitley. White pine acreage within the forest has been estimated at 14,401 acres of native pine and 77 acres of planted pine out of a total for the State estimated at 62,417 acres. Wild ribes were very scarce, being found in 1934 at only one place in Wolfe County, believed to be in the forest. Cultivated ribes were found in abundance in the central white pine counties in 1934. No rust had been reported through 1939.

Surveys

Because of the absence of any surveys in 1940 and 1941 in Kentucky, it was considered advisable to search for blister rust in 1942. Mr. Henry E. Yost, State leader in Virginia, with nine years of experience in Maryland, Delaware, West Virginia and Virginia carried on an intensive survey for the rust from September 8 to 13 inclusive, also contacting Messrs. Borden and Sipe, Forest Supervisor and Deputy at Winchester and Ranger Stoll and Smoot. No blister rust was found within the forest or at any location in Kentucky.

Ribes

In scouting for the rust on the forest, two small patches of wild ribes (*R. cynosbati*) were found on Chimney Top Creek in Wolfe County and examined for rust. No rust was observed. The first patch included five large gooseberry bushes in full leaf on the west side of the main branch, known locally as the Left Fork. Scattered pine under 50 trees per acre were in the vicinity of the bushes in the first half mile up the Fork. The second group of eight bushes were between 1/2 mile and 3/4 mile up the Left Fork, also on the West side. The bushes were obviously seedlings, having but ten feet of live stem per bush. This group was destroyed. The remains of old bushes pulled in 1934 were found nearby, and the site was marked in red paint "U. S. D. A."

Mr. J. B. Ledford who lives at the mouth of Chimney Top Creek advised Mr. Yost that wild gooseberries were widely distributed in the community, but that he knew of no heavy concentrations. In 1934, 2,095 wild ribes were removed from Chimney Top Hollow on the Floyd Day tract, and one was destroyed in 1939. Cultivated gooseberry and currant bushes were found to have disappeared to a very large extent in the Cumberland Mts. counties. At 10 places visited by Mr. Yost, 21 bushes were found in 1942, whereas in 1934 there were 751 bushes present. 97% had disappeared or had been destroyed by the owners. No eradication of cultivated ribes at occupied house sites has ever been carried on in Kentucky. Hence with the purchase of old farms by the Forest, there may have been included some old currant or gooseberry bushes. While probably not numerous, they may become a menace if well scattered over the forest, once the blister rust invades the white pine counties.

Future Plans

It is considered unnecessary to rescut the forest, or private and State lands in Kentucky within the next two or three years. After the war if relief funds are made available in large amounts an accurate survey of the white pine areas in the forest, coupled with intensive scouting for fires, might be considered advisable. In the meantime, it is suggested that forest officers and fire guards be on the lookout for both currants and gooseberries at the old home sites within the forest, and that where found the bushes be destroyed by uprooting, and that these be reported to the Forest Supervisor. Five sets of specimens of different ribbon species will be sent the Forest Supervisor this spring (1943) for the use of the rangers.

2. REPORT OF PROGRESS OF WHITE PINE BLISTER RUST WORK
ON THE GEORGE WASHINGTON NATIONAL FOREST IN VIRGINIA
FOR THE PERIOD JULY 1 THROUGH DECEMBER 31, 1942

Introduction

The first blister rust work was carried on on the George Washington National Forest in 1929. The program was enlarged after the C. C. C. became established. Additional work was carried on under various other Federal Emergency Programs. When the work was in its earlier stages, only the very best stands of white pine were considered worth protecting. Since that time it has been found that white pine has reproduced extensively over much of the forest area and considerably more knowledge has been gained regarding the distribution and concentrations of wild ribes.

The blister rust was first found on the forest in 1932 on the Dry River Ranger District in the North River Watershed. Later observations indicate that the rust probably became established along the Virginia-West Virginia line, in the vicinity of Reddish Knob about 1924. A survey in 1933 by Mr. J. M. Cullen indicated that in one area near Camp Todd, in the Dry River District, approximately 7% of the white pines were infected. Ribes eradication, canker elimination, mortality of infected trees and extensive reproduction of white pine since that time has reduced the pine infection in that vicinity to perhaps less than 1%. Extremely heavy infections were found in some locations along the crest of the Shenandoah Mountain, where wild ribes are generally heavy and the white pine is frequently of such low value that protection is not feasible. These and other centers of infection on the pine have produced large volumes of aecia spores which laterally spray the rust over practically all of the George Washington National Forest and surrounding sections. As a result the rust has been found in every county in which the forest is located. The rust appears to be generally well distributed, in the ribes-bearing sections, with a very low percentage of the trees infected.

Records and maps pertaining to the earlier work were found to be inadequate, therefore, a grid system was established in 1940 whereby an entire county is divided into nine square units and further grouped into blocks of 48 square miles each. Where necessary, these lines are established and located on the ground and the pine areas and work areas are handled as units of a square mile, or fraction thereof. In this manner the white pine bearing areas of the forest are being resurveyed and reworked.

All of the work previous to July 1, 1942 was performed with Emergency Funds or very small allotments from the Regular Forest Service Appropriation. Under various Emergency programs from 1937 through June 30, 1942, a total of 102,508 acres were reported initially worked in Virginia and 21,133 acres in West Virginia. A total of 2,177,904 ribes were pulled during that period with an expenditure of 23,059 eight-hour man days. Beginning July 1942, \$19,500 was made available for blister rust work for the fiscal year ending June 30, 1943. This paper represents a preliminary report of the work under this program for the period July 1 to December 31, 1942.

GEORGE W. ELIOTT'S WHITE PINE FOREST (Continued)

Survey July 1 - December 31, 1942Dry River District Deerfield District Total

Control Acres Resurveyed	11,038	31,148	42,186
Acres White Pine to Protect	4,559	20,238	24,797

Ribes Reeradication July 1 - December 31, 1942

Acres worked by crew and scout	2,592	3,982	6,574
Acres found ribes free	5,656	16,718	22,374
Total acres covered	8,248	20,700	28,948
Total No. ribes pulled	11,656	72,229	83,885

Total Man Days Used July 1 - December 31, 1942	770	1,297	2,067
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Cost of Control July 1 - December 3, 1942

Labor	\$3,610.22	\$3,610.23	\$7,220.45
Supervision and Operation	1,125.73	1,125.73	2,251.46
Total	\$4,735.95	\$4,735.96	\$9,471.91

Work remaining to be done during fiscal year 1943

Resurvey to be done	17,445	-	17,445
Reeradication to be done	9,691	7,977	17,668

Because of a gradual increase in white pine through natural regeneration it has been found necessary to conduct resurveys over the old white pine areas by the grid system.

Reeradication was conducted, and will be conducted, on all resurveyed areas where such work is found necessary. In advance of reeradication work, post checks were run with the result that 22,374 acres were found to be ribes free which eliminated any crew work to be performed thereon. According to the work plan set up for the current fiscal year there still remains 17,445 acres to be resurveyed to determine the status of white pine and the amount of reeradication needed. The 17,668 acres of reeradication to be done was determined from resurveys already completed.

Recommendations

It is recommended that the work be continued during the fiscal year 1944 on approximately the same basis as during the current fiscal year.

Future Work Plans

It is planned to continue for the remainder of the current fiscal year following in general the work plan as originally outlined, making such deviations as are from time to time considered desirable or found necessary, due to labor and transportation problems. By June 30, 1943, in all probability that part of the

GEORGE WASHINGTON NATIONAL FOREST (Continued)

Deerfield and Dry River Ranger Districts lying in Highland County will be protected to such a degree that comparatively little, if any, work will be required for three years or more. Considerably more than half of that part of the Deerfield Ranger District lying in Augusta County has been resurveyed and worked within the last two years. Practically all of that part of the Dry River District lying in Augusta County will have been resurveyed and worked. Some work was carried on in the last two years in that part of the Dry River District lying in Rockingham County. Depending upon the labor supply during the spring of 1943, possibly not more than one-half of this county will have been resurveyed and reworked. Work during the fiscal year of 1944 will therefore be concentrated in the Dry River District in Rockingham and Shenandoah Counties, and in the Deerfield District in Augusta and Bath Counties, or possibly Rockbridge County.

With the appropriations continuing at approximately the present level, very likely two additional years would be required to complete resurvey and eradication on the George Washington National Forest. This would mean the entire forest having been covered by perhaps June 30, 1947. By that time it would be desirable to resume post checking for those areas which have been worked during the last two years in Highland, Augusta and Rockingham Counties. Information to date indicates that ribes regeneration will be light, but blister rust has become distributed sufficiently so that it will be necessary to keep the ribes population reduced to a minimum.

The resurvey work during the last two years in Rockingham County has revealed that there is present more than double the acreage of pine originally estimated. On this basis, we can safely assume that instead of being 56,000 acres of white pine present on the George Washington National Forest as indicated in 1941 Annual Report, this figure will perhaps be from 100,000 to 150,000 acres. It is estimated that approximately 300 grids, or square miles of land within the purchase area of that part of the forest lying in Rockingham, Highland and Augusta Counties remain to be examined, mapped and eradicated, if found necessary. In all probability, one-half of these grids will be found to have no white pine worth protecting or be found on private holdings within the purchase area of the forest. On this basis, approximately 150 grids, or square miles, remain to be mapped and eradicated in these three counties. During the first six months of the current fiscal year, 88 grids were mapped and ribes eradication, where necessary, was carried on on 72 grids. During the same six months, approximately one-half of the \$19,500 allotment was expended. This would indicate that approximately 150 grids can be mapped and the ribes eradicated, where necessary, with an allotment of approximately \$20,000. This would indicate an over-all average cost of approximately twenty cents per pine acre.

That portion of the George Washington National Forest lying in West Virginia has been completely surveyed for white pine and ribes. Out of 43,417 control acres, 584,047 ribes have been pulled to protect 21,133 acres of native white pine. To date, 28,386 acres in the control area have been classed as ribes-free. A thorough recoverage of ribes-bearing areas is recommended for the fiscal year 1944 in order to determine the exact status of ribes-free and ribes-bearing lands in the control area and ^{to} conduct necessary ribes reeradication. Ribes regeneration is fairly heavy on the slopes of the Shenandoah Mountain in Pendleton County and it is found that if reeradication is not conducted very soon, the rust may get a head start on us in several locations.

George Washington National Forest (Continued)

In addition to the blister rust control carried on on the George Washington National Forest with Forest Service Funds since July 1, 1942, there was considerable control work carried out by the Bureau with State WPA Funds from January 1 to June 30, 1942. 3,523 acres were worked, 1,287 acres being initial work and 2,236 acres rework; and 139,742 bushes destroyed, of which 88,915 bushes were pulled initially at the rate of 69 per acre, and 139,742 bushes were pulled in the rework. The average number of bushes per acre for both Forest Service and Bureau rework was 4.3. This shows to what extent repeated eradication have brought down the ribes population in the areas reworked in 1942.

VIRGINIA 3. JEFFERSON NATIONAL FOREST

Introduction

No white pine surveys or ribes eradication have been conducted on the Jefferson National Forest since 1940, during which year a small eradication job was carried on to rework the Forest Service white pine plantation at Parkers Gap in the Glenwood District. Prior to 1940, practically all of the control work was confined to the Holston Ranger District. No systematic white pine surveys were made and the total estimated white pine acreage considered worth protecting was given as only 10,297 acres. In the light of recent general surveys this acreage figure appears to be extremely underestimated and plans are now underway to lay out definite work plans to eventually cover all the white pine growing sections on the forest by the grid survey system. A project proposal has been submitted to the Forest Service to start such a survey during the spring of 1943 in the Glenwood District. It is expected that more than 10,000 acres of white pine will turn up on the grid survey in this district alone.

Ribes Eradication

Out of 35,517 control acres (white pine plus protective zone) covered on the original survey, 22,430 acres were listed as ribes-bearing. Actually the acreage from which the largest concentrations of ribes was eradicated amounts to much less than 22,430 acres. This figure represents both crew and scout work; the latter (or scout) being a term used to explain the covering of likely ribes sites and eradicating small isolated patches of ribes where found.

Through 1940 a total of 1,344,679 ribes were eradicated from Forest Service lands on the Jefferson on first and second workings.

Blister Rust

Blister rust was generally found on ribes throughout southwestern Virginia in the fall of 1941 but no locations were reported at this time on the forest even though the rust has been found in 11 counties in which the forest is located. On December 17, however, during a general reconnaissance of the work area set up for the Spring of 1943 a single branch canker was found on Forest Service land in the Glenwood District near Simpson Creek.

Work Plan Proposed for the Spring of 1943

A work plan and budget was prepared and submitted to the Regional Forest Service Office in May 1942 by Mr. Roy G. Pierce to conduct ribes reeradication on the forest in southwest Virginia. Because of labor and transportation problems involving present war conditions the plan was revised so the work would more or less be concentrated and confined to one section of the forest, which in this case, is in the Glenwood District in southeastern Alleghany County. The budget calls for an expenditure of \$3,261.00 to survey approximately 16,640 acres during the months of March, April, May and June 1943. A total of 640 man days of labor was estimated for the job.

Introduction

In general, ribes eradication on the Monongahela National Forest has not been much of a problem since so much of the control area has been found to be free of wild ribes. However it has now been several years since any control work has been carried on in the forest and in the light of a rather widespread increase in white pine acreage through natural regeneration on private and State lands noted by our resurveys on Federal and State cooperative projects we can expect the same situation, if not more so, on the forest. With sufficient funds available it should not be a difficult task to resurvey, post check and conduct all necessary ribes eradication on the forest by the end of the 1944 fiscal year.

Ribes Eradication

The status of ribes eradication has changed very little since the 1941 annual report which listed a total control acreage of 79,086 acres of which 75,094 acres have been reported worked. A total of 376,928 ribes were eradicated on first and second workings to protect 27,250 acres of white pine. Of the 79,086 acres, 56,057 acres have been classed as ribes-free. After resurveys and post checks are completed on the forest it is expected that the ribes-free acreage will be materially increased along with an increase in white pine acreage.

In 1942, outside of the regular annual sanitation work on the Parsons Nursery, only 130 acres were worked on the forest in Pendleton County, the crew eradicating 1,530 ribes. This was classed as initial work and was carried on in conjunction with our regular cooperative project in order to complete control operations on adjoining private lands.

Blister Rust

So far, no visible damage has occurred to any of the white pine stands on the forest by blister rust, which condition can be attributed to extensive ribes-free areas, the completion of initial and a good deal of second eradication before the disease had a chance to become established and the seeming lack of heavy ribes regeneration following these workings. Some heavy infections have been found on ribes but for the most part they were outside of the control areas. (Since January 1, 1943 several scattered white pine infections have been found on the resurvey in Pocahontas County).

Nursery Sanitation

The Parsons Nursery located in Tucker County was again worked in 1942 by Mr. R. G. Pennington who expended 16 man days scouting the nursery and only finding 100 small ribes bushes. In 1943 it is planned to run a regular eradication crew over the entire nursery in order to give the nursery a thorough eradication job. Because of these annual inspections and eradication jobs the rust has been kept out of the white pine growing in the nursery.

Work Plan Proposed for the Spring of 1943

Since word has been received of funds available for blister rust control operations on Forest Service lands in Region 7 during the Spring of 1943 a budget and work plan was submitted and approved by the Forest Service for control operations to start on the Monongahela National Forest in February, 1943 and continue through June of the same year. The work plan calls for a resurvey and post check on 16,269 acres and conducting ribes reeradication where necessary. It was estimated that \$5,175.00 would be sufficient to carry on this work, including labor, supervision and necessary operating expenses.

If a similar project is approved for the fiscal year 1944 it is expected that all of the white pine growing sections in the forest can be covered by resurveys and all necessary reeradication completed. If this is accomplished, no or very little work will have to be done on the forest for several years.

NATIONAL FORESTS

IV C

Region 6 - States of Georgia, North Carolina, South
Carolina and Tennessee

1. CHATTAHOOCHEE NATIONAL FOREST
1942

Introduction

Because of the lack of detailed white pine maps very little was known as to the exact status of blister rust control on the Chattahoochee National Forest prior to 1938. Since the fall of 1938, detailed mile square white pine survey grid maps have been made covering much of the forest. By plotting in the ribes areas we are now getting a clearer picture as to the association of white pine and wild ribes which makes it a simple matter to delimit the ribes areas so as to definitely define the actual amount of ribes eradication to do. On many sections of the forest where ribes were originally pulled by the thousands the grid maps have shown in numerous cases that the white pine worth protecting is too far removed to warrant any further working. In a few other instances some new ribes locations, which should be worked, have been turned up on the survey.

Since the bulk of the white pine acreage in northern Georgia lies within the purchase unit boundary of the forest nearly 50% of all control operations in the State have been on Forest Service lands. White pine grows very rapidly in northern Georgia and under fire protection is seeding in very heavily throughout many sections of the forest.

Ribes Eradication

During 1942 no wild ribes were eradicated on the forest. A total of 8,509 acres were, however, covered by the survey crews which acreage was found to be ribes-free. Since the start of ribes eradication work on the forest in 1933 a total of 3,757,514 ribes have been pulled on initially and reworked acreage. Out of 146,895 acres reported in the control area on the national forest, only about 10,000 acres can be classed as ribes-bearing and this figure is expected to be reduced as the survey progresses, and more accurate acreage figures are available.

In some sections of the forest old cultivated ribes were found to be quite numerous, especially at abandoned house sites. These have been eradicated whenever found.

Blister Rust

No blister rust infections have been found, either on ribes or white pine.

Work Plan for Fiscal Year 1943

A work plan and budget has been submitted and approved by the Forest Service in the amount of \$5,000 to survey and work 29,500 acres of Forest Service lands in the Conasauga River and Grassy Mt. sections. The ribes areas on the Grassy Mt. section have been initially worked with some rework also performed. A general check has indicated enough ribes regeneration to warrant a complete rework job in 1943.

Future Work

Future work will consist of surveys by the grid system (144,834 acres have been grid mapped as of December 31, 1942) and conducting ribes eradication where found necessary. It is estimated that if work continues on the forest all of the white pine bearing lands will be on maintenance by the end of the 1945 fiscal year.

Introduction

Because of the continuance of a State WPA project in Tennessee throughout 1942 we were able to do a certain amount of ribes eradication on national forest lands.

As in the other national forests in Region 8, which fall within the white pine blister rust control area we are fortunate that most of the acreage so far covered by the survey crews is ribes-free. As in the case of the Chattahoochee National Forest in Georgia no detailed surveys were made during the early years of work, hence it was difficult to ascertain whether some of the early ribes eradication was fully justified with respect to white pine conditions. Since 1937, however, detailed white pine surveys have advanced so far that only two counties (Polk and Monroe) in which the forest lies, remain to be covered. So far, most of the ribes eradication has been confined to the Unaka and Watauga Divisions.

Ribes Eradication

During 1942, 1,081 acres of initial work and 1,045 acres of rework was carried on in the Unaka Division in Sullivan and Johnson Counties, respectively. A total of 25,315 bushes were pulled, expending 340 eight-hour man days. Since 1933, 222,215 acres have been initially covered and 23,161 acres reworked. Of the 222,215 acres so far covered probably not more than 10,000 acres will eventually have to be maintained. As of December 31, 1942, 1,741,217 ribes have been eradicated on Forest Service lands.

Blister Rust

No blister rust infections have been found on ribes or white pine on Forest Service lands. In the Fall of 1941 a few ribes were found infected in two localities, one in Johnson County and one in Carter County, near the North Carolina line.

Work Plan for Fiscal Year 1943

In order to complete the surveys on Forest Service lands so that eventually we will know the exact status of control work, a work plan and budget was submitted to the Forest Service and approved for work in the Cherokee Division in Polk County. A total of 54,080 acres were set up in the work plan to cover over a period of five months in the Spring of 1943. The estimated cost of this project amounts to \$6,920.00.

Future Work

It is planned to continue work on the Cherokee Division until the survey is completed on Forest Service lands in Polk and Monroe Counties. During the fiscal year of 1944 operations will be extended into northeastern Polk County and southeastern Monroe County. There are some excellent white pine stands in this section of the forest. Since all known ribes areas are located at fairly high elevations, usually above 2,500 feet, it is not likely that there will be a great deal of ribes eradication to do. However, the ribes and white pine zones in the Tellico River Section come fairly close together so it cannot be accurately determined whether ribes eradication will be justified in this section until the white pine survey is completed. Some ribes eradication was performed in this section in 1933 by CCC crews.

After the status of Polk and Monroe Counties is known there will be very little work on the forest to maintain.

3 PISGAH NATIONAL FOREST 1942

Introduction

Because of the curtailment of emergency programs in 1942 only a limited amount of blister rust control was carried on in the Pisgah National Forest in North Carolina. All ribes-bearing areas within the white pine growing sections of this forest have been grid surveyed and we now have definite information and good maps concerning the status of control work on this forest. The maintenance of areas already worked will be a relatively simple job as long as work plans are carried out according to recommendations set forth in the Permanent Control Records.

Ribes Eradication

In 1942, 231 acres were initially worked on white pine Plantation No. 12 in Buncombe County with 23,410 ribes being pulled. All other work consisted of rework on 40 acres in Plantation No. 10 on Mineral Creek and 414 acres reworked in the French Broad Division, Pigeon River Section, in Haywood County. The WPA project working in Haywood County was terminated before work was completed in this section of the forest. However, it is contemplated to finish this job in the Spring of 1943.

SUMMARY OF RIBES ERADICATION ON THE PISGAH NATIONAL FOREST

Period	Working	Acres White Pine Protected	Control Acres Worked	Acres Ribes Free	Acres Ribes Bearing	Ribes Pulled	8-Hour Man-Days
1933 through 1941	Initial & Rework		148,010 5,110 153,120	131,140	16,870 5,110 21,980	516,245 44,994 561,239	285 107 392
1942	Initial & Rework		231 223 454		231 223 454	23,410 1,731 25,141	173 161 334
1933 through 1942	Initial & Rework	74,536	148,241 5,333 153,574	131,140	17,101 5,333 22,434	539,655 46,725 586,380	10,458 1,268 11,726

Blister Rust

Since the discovery of blister rust on ribes in four northwestern counties in 1941 a close check has been made for infections on white pine. To date, no white pine infections have been found in the State.

Work Plan - Fiscal Year 1943

In order to complete post checking and ribes reeradication started by WPA crews in 1942 in the Pigeon River Section, a work plan and budget was prepared and submitted to the Forest Service to rework 4,810 acres during April, May and June, 1943. An allotment of \$1,320.00 was requested to carry on this work. Work will commence in

Poplar National Forest (Continued)

April so as to coincide with fire season.

Future Work

Only one more section covering approximately 22,071 acres in the Poplar Section of Mitchell and Yancey Counties is recommended for reworking in the near future. If this section is reworked during the fiscal year of 1944 the forest should be on a full maintenance basis for at least five years. Periodic post checks will determine when additional reworkings are needed.

Introduction

Blister rust control began on this forest formerly part of the Sandhills in 1933 with CCC men who worked out of Camp F-9 at Franklin, North Carolina and out of Camp F-1 at Mountain Rest, South Carolina, under the leadership of Mr. Warriner, an experienced blister rust control man.

Surveys and Records

White pine surveys carried on in 1933 by Mr. Warriner, in '34 by J. H. Dean, and in '38 by Jos. M. Mann, have discovered 2,075 acres of native white pine in Oconee County, with a control area estimated at 3,700 acres. The acreage of many stands was estimated. Since wild ribes were not found within the State, it was felt unnecessary to expend funds for an accurate survey of the white pine by traverse, the method in practice in early years. The general location of the pine and the approximate size of the area was indicated on U. S. Geological Survey quadrangles, kept in the Richmond, Virginia regional office.

Cultivated Ribes

Thirty eight cultivated ribes were found in 1934 at house sites in the National Forest and destroyed. No wild ribes have ever been found in the State, except the rotundifolium bushes which have been transplanted from Georgia or North Carolina mountains, and these latter are classed as cultivated since they were in gardens. It is very likely that there are still living some ribes bushes at abandoned house sites within the Forest Service boundary, though perhaps not on National Forest land.

Outside of the National Forest there have been 7,499 cultivated bushes, or escaped bushes, or bushes at abandoned house sites destroyed from 1933 to 1938 in the upper portions of Oconee, Pickens and Greenville Counties. Some of these private lands may be or may have been purchased by the Forest. It is therefore well to bear in mind that with land purchases, there may also be the purchase of abandoned ribes bushes.

White Pine

White pine is found as scattered trees or small stands at elevations as low as 800 feet along the Chatuga River and Brasstown Creek, from 1,200 to 1,500 feet along the Whetstone Creek and at higher elevations up to 2,000 feet along Tomasse Creek. In the northern part of the county, along North Fork of the Chatuga the stands of pine become larger and particularly near the Fish Hatchery. Some 275 acres of pine were found in two lots near the Fish Hatchery on the Forest at 2,500 feet elevation. Other stands in this section outside of the forest are found at from 2,450 up to 3,000 feet elevation. A high percent (over 50%) of the white pine in the northwest section of the county was over 12" d. b. h. in 1938, and in age the trees run up to 175 years and reached a maximum circumference of 11 feet and a height of 150 feet. Some stands of pine are pure white pine, 700 trees per acre, with trees up to 125 feet in height and 11 feet in circumference.

Even at low elevations down to 1,000 feet, reproduction of white pine is in places excellent. On Whitmire's Creek the small seedlings ranged from 800 to 1,000 per acre. It was estimated by the Forest Supervisor on January 1, 1930 that there were 5,890,000 ft. B. M. of white pine saw timber in the forest in South Carolina.

IV C Vacant

IV B Vacant

TABLE #3 SHEET #15
SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS - 1942

NATIONAL FORESTS	INITIAL WORK		REERADICATION WORK		TOTALS	
	Acreage	No. Ribes* No. 8-hr. : Acreage : No. Ribes* : No. 8-hr. : Acreage : No. Ribes* No. 8-hr. : Worked : Destroyed : Man-Days : Worked : Destroyed : Man-Days : Worked : Destroyed : Man-Days :				
Ga. - Chattahoochee	8,509	-	80	-	8,509	-
Ky. - Cumberland	-	-	-	8	5	8
N.C. - Pisgah	231	23,410	173	1,731	454	25,141
Tenn. - Cherokee	1,081	15,202	147	10,113	2,126	25,315
Va. - Geo. Washington	1,287	88,915	434	134,712	32,471	223,627
W.Va. - Monongahela	130	1,530	12	-	130	1,530
TOTAL	11,238	129,057	846	146,564	43,695	275,621

*Wild and cultivated Ribes. (1) Worked by Agent.

TABLE #4A SHEET #9
SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS 1918 - 1942 (INCLUSIVE)

Acreage of White Pine in Net Control Area									
Total Acreage* (W.P. & Prot. Zones)		Acreage not Yet Worked Initially		Gross Acreage Reported		Net Acreage Worked in Control Area		Gross Number Wild & Cult. Ribes Destroyed	
a	b	c	d	e	f	g	h		
Ga. - Chattahoochee	258,228	150,095	3,200	468,390	446,895 (1)	3,711,760 (2)	18,400		
Ky. - Cumberland	14,478	30,565	-	30,565	30,565	2,095	337		
N. C. - Nantahala	23,736	46,536	-	55,103	46,536	393	494		
N. C. - Pisgah	44,536	148,211	-	148,211	148,211	539,655	10,159		
S. C. - Sumter	2,075	3,700	-	3,700	3,700	38	53		
Tenn. - Cherokee	158,000	257,963	35,748	222,215	222,215	1,726,354	11,070		
Va. - Geo. Washington	56,000	132,000	4,642	127,358	127,358	1,248,925	12,121		
Va. - Jefferson	10,297	40,000	4,483	35,517	35,517	576,907	7,000		
W. Va. - Geo. Washington	21,123	48,417	-	48,417	48,417	505,011	4,617		
W. Va. - Monongahela	29,000	80,000	4,176	75,824	75,824	326,185	3,625		
TOTAL	647,473	1,237,517	52,249	1,215,330	1,185,268	8,637,323	68,087		

* Column c = Column d and column f. (1) Of this Net Acreage only 149,110 acres have actually been mapped by survey, the remainder has been estimated. (2) Georgia figures adjusted to agree with Permanent Control Records.

TABLE #1A SHEET #10

SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS 1918 - 1942 (INCLUSIVE)

REERADICATION WORK					TOTALS (INITIAL & REWORK)			
	Gross Acreage Reported	Net Acreage Reworked	Gross Number Wild & Cultivated Ribes Destroyed	Gross No. 8-Hour Man-Days	Gross Initial Net Acreage and Reworked	Gross No. Wild & Cult. Ribes Destroyed	Gross No. 8-Hour Man-Days	
NATIONAL FORESTS								
Ga. - Chattahoochee	7485(1)	7485(1)	45,754	219	475,875	3757,514	18,539	
Ky. - Cumberland	55	55	9	(2)	30,620	2,104	337	
N.C. - Nantahala	-	-	-	-	55,103	393	494	
N.C. - Pisgah	133326(1)	5333	46,725	1268	281,567	586,380	11,726	
S.C. - Sumter	425	425	-	10	4,125	38	63	
Tenn. - Ckerokee	23161	23161	14,863	420	245,376	1741,217	11,494	
Va. - Geo. Wash.	71433	71433	614,038	9748	198,791	1862,963	21,869	
Va. - Jefferson	3963	3963	767,772	5387	39,480	1344,679	12,455	
W.Va. - Geo. Wash.	13784	13784	79,036	634	62,201	584,047	5,251	
W.Va. - Monongahela	3831	3831	52,273	252	79,655	378,458	3,797	
TOTAL	257463	129470	1,620,470	17,938	1,472,793	1314,738	10257,793	86,025

(1) Georgia and North Carolina figures adjusted to agree with Permanent Control Records
 (2) Worked by Agent, charged to supervision.

EXTRACT FROM TABLE #5, SHEET #2
SUMMARY OF EXPENDITURES FOR 1942

Financial Project		
STATE	BLM FOREST SERVICE	
North Carolina	\$2.00	
Virginia	9,471.91	
West Virginia	66.00	
TOTAL	\$9,539.91	

TABLE #7A, SHEET #1

BLISTER RUST CONTROL WORK
PERFORMED ON FEDERAL LANDS - SOUTH APPALACHIAN STATES
ACREAGE DATA 1942 and 1918 to 1942 INCLUSIVE

NATIONAL FORESTS

NAME OF FOREST	State	Acreage National Forest Land in Control Area	Period Calendar Year	Acres Eradicated of Ribes By			Total
				FOREST SERVICE			
				First Working	Second Working	Subsequent Working	
Chattahoochee	Georgia	450,095	1942	-	-	-	-
Cherokee	Tennessee	257,963 (1)	"	-	-	-	-
Cumberland	Kentucky	30,565	"	-	-	-	-
Geo. Washington	Virginia	132,000	"	-	28,545	403	28,948
Geo. Washington	W. Virginia	48,417	"	-	-	-	-
Jefferson	Virginia	40,000	"	-	-	-	-
Monongahela	W. Virginia	80,000	"	-	-	-	-
Roanohala	N. Carolina	46,536 (1)	"	-	-	-	-
Pisgah	N. Carolina	448,241 (1)	"	-	-	-	-
Sumter	S. Carolina	3,700	"	-	-	-	-
TOTALS		1237,517			28,545	403	28,948
All National Forests		1237,517	'28-'38	143,659	39,219	-	182,878
			1939	-	-	-	-
			1940	16,917	-	-	16,917
			1941	-	-	-	-
			1942	-	28,545	403	28,948
GRAND TOTAL - All Years 1918 - '42 inclusive				160,576	67,764	403	228,743

(1) There has been some change in the acreage figures for these forests since the annual report of 1941, due to more accurate surveys

TABLE 7A, SHEET # 2

BLISTER RUST CONTROL WORK

PERFORMED ON FEDERAL LANDS - SOU. APPAL. STATES

ACREAGE DATA 1942 and 1918 to 1942 INCLUSIVE (CONT'D)

NATIONAL FORESTS:

Acres Eradicated by
BUREAU

BOTH AGENCIES

Total Acreage
According to

Present Ownership Unworked
(Initial Wkg.) Acreage

NAME

OF

FOREST 1942

First Working

Second Working

Subsequent Working

Totals

First Working

Second Working

Subsequent Working

Totals

Present Ownership Unworked

(Initial Wkg.) Acreage

Chattahoochee	Ga.	8,509	-	-	8,509	-	-	-	8,509	3,200
Cherokee	Tenn.	1,081	1,045	-	2,126	1,045	-	-	2,126	35,748
Cumberland	Ky.	-	5	-	5	5	-	-	5	-
Geo. Washington	Va.	1,287	2,236	-	3,523	30,781	403	-	32,471	4,642
Geo. Washington	W. Va.	-	-	-	-	-	-	-	-	-
Jefferson	Va.	-	-	-	-	-	-	-	-	-
Monongahela	W. Va.	130	-	-	130	-	-	-	130	4,483
Nantahala	N.C.	-	-	-	-	-	-	-	-	4,176
Pisgah	N.C.	231	183	40	454	183	40	-	456	-
Sumter	S.C.	-	-	-	-	-	-	-	-	-
TOTALS		11,238	3,469	40	14,747	32,014	443	-	43,695	52,249

1918 - 1942 INCLUSIVE)

ALL NATIONAL

FORESTS	1928-1938	711,390	89,036	6,080	806,506	855,049	128,255	6,080	989,384	855,049
	1939	99,568	46,208	-	145,776	99,568	46,208	-	145,776	99,568
	1940	146,754	19,935	1,410	168,099	163,671	19,935	1,410	185,016	163,671
	1941	68,991	24,648	9,048	102,687	68,991	24,648	9,048	102,687	68,991
	1942	11,238	3,469	40	14,747	11,238	32,014	443	43,695	11,238
GRAND TOTAL - All		1037,941	183,296	16,578	1,237,815	1,198,527	251,060	16,981	1,466,558	1,198,517

Forests 1918-1942

Adjustment to agree with Permanent Control Records

See Table 4A, Sheets 9 and 10 - Gross Acreage

Corrected Totals

16,813 -10,578

46,235

1215,330

52,249

(2) Of the 16,981 acres of subsequent working 16,941 acres have been worked on the George Washington National Forest in Virginia and only 40 acres on the Pisgah National Forest in North Carolina.

V. National Parks

B. Cooperative Agreements

Cooperative work on the Shenandoah National Park is covered by a working field agreement between the Superintendent of the Park and the State leader of Blister Rust Control. The original agreement made in 1940 was revised in June 1941 covering the fiscal year 1942. No cooperative agreement exists for the present fiscal year 1943, and to my mind, none is needed, since the Bureau does not contemplate carrying on any eradication or control work within the Park. A field agreement can be made up when and if necessary.

No cooperative agreement exists for blister rust control work on the Blue Ridge Parkway, nor is there one needed at present. However, there is a working field agreement between the Bureau and the Park officials drawn up by Messrs. Fred H. Arnold of the Regional Office of the Park Service at Richmond and Mr. J. C. Ball, Assistant Regional Leader of the Richmond Office of Blister Rust Control, dated May 26-27, 1941. This covers work in North Carolina and Virginia.

For the cooperative work in the Great Smoky Mountains National Park a cooperative agreement exists for work in Tennessee signed by Sup't. J. R. Ball of the Park Service and W. D. Tunksley, Tennessee State leader for the Bureau, October 1, 1940. This agreement is still in force. For work in North Carolina, a work plan was drawn up by Messrs. Paul M. Wentworth, Assistant Forester of the Park Service and H. B. Teague, North Carolina State leader for the Bureau on June 6, 1939. No revision of this plan has been made since that date nor is there one desired at present.

C. Organization of Control Work

In 1942 all eradication work in the Great Smoky Mountains National Park was carried out under the general supervision of State leaders Tunksley and Teague and under the direct supervision of our agents working under the State WPA project with a crew of laborers and a foreman.

In the Blue Ridge Parkway in North Carolina, an agent supervised the small amount of work on 10 acres, while in Virginia the Park Rangers secured the destruction of 210 cultivated bushes.

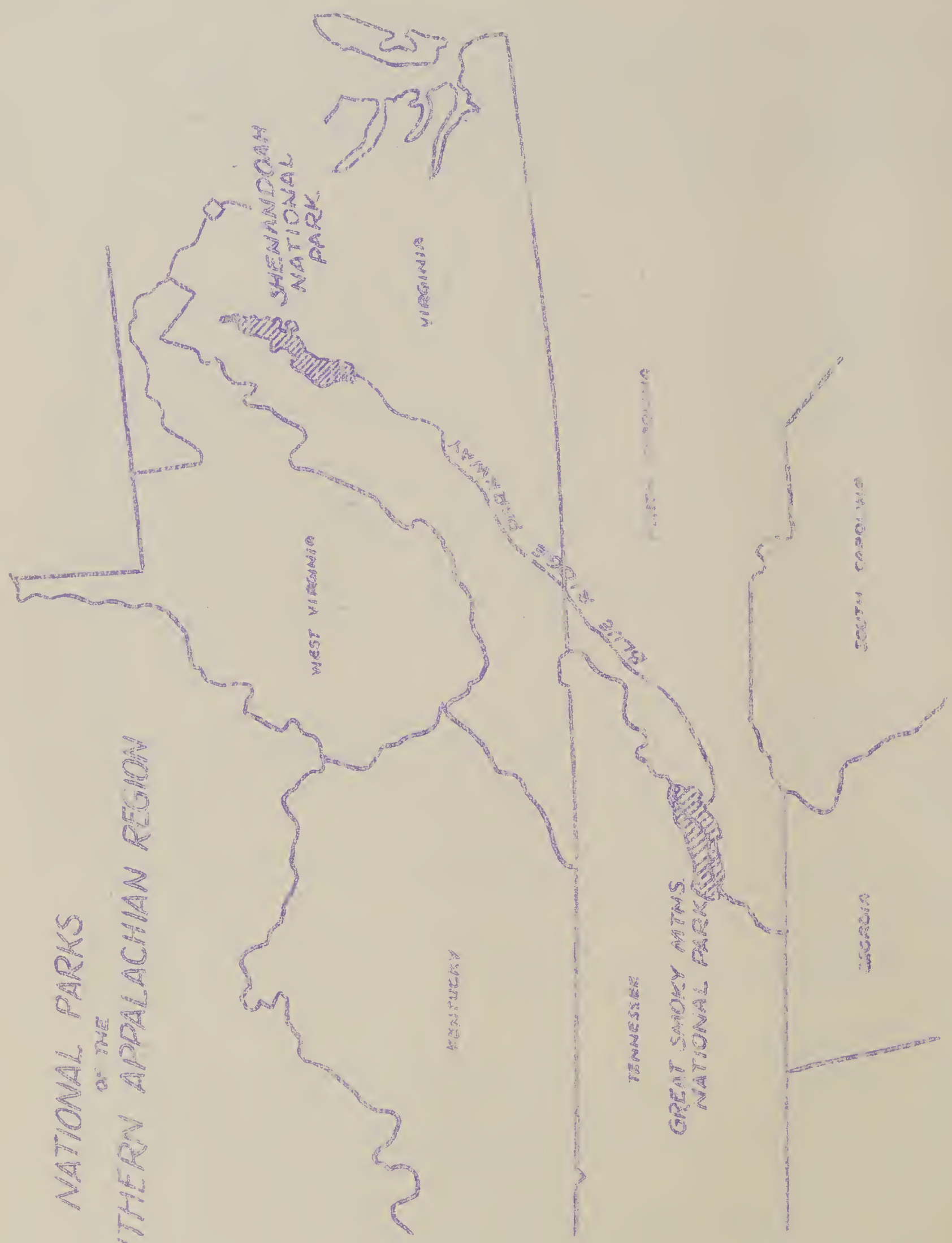
In the Shenandoah National Park all of the work was carried out by the Bureau with laborers from State WPA projects.

D. Work Accomplished

1. In 1942 the survey of the Great Smoky Mountains National Park in Tennessee was finished by Agent Lane. The entire area 7,721 acres was found to be ribes-free. In that part of the Park in North Carolina 539 acres were reworked along Cataloochee Creek and 14,789 wild ribes removed. This is at the rate of 25 per acre.

In the Shenandoah National Park in Virginia all eradication was classed as rework 164,500 ribes being removed from 1,353 acres, which is at the rate of 121 bushes per acre. Grid surveys were carried on in Appomattock County covering 6,400 acres of control area and 2,606 acres of pine.

NATIONAL PARKS
OF THE
SOUTHERN APPALACHIAN REGION



V D-2 From 1918 - 1942

Both the Great Smoky Mountains and the Shenandoah National Park have been surveyed in one way or another and initially worked, and some areas in both parks have been reworked several times.

Ribes exist in quantity in the Shenandoah National Park in many of the white pine areas. On the other hand, ribes-bearing areas are found on less than 640 acres of control area in the Great Smoky Mountains National Park, all in the Cataloochee Creek Section in Haywood County, North Carolina. In Tennessee, no ribes-bearing areas have been found in the white pine areas of the Park, the only ribes found being cultivated bushes at home sites.

The Blue Ridge Parkway has not been completed as yet either in North Carolina or Virginia, hence not all of it has been surveyed for pine and ribes. In Virginia work on the Parkway began in 1942. Since some of the Parkway was carved out of the George Washington and Jefferson National Forests, it will likely be found that some of the pine areas have already been surveyed at least by the traverse system, as National forest land.

It has been difficult to prevent the blister rust spreading to the pine on the Shenandoah National Park, owing to the early presence of the disease, the high elevation of most of the pine areas, the abundance of ribes and the character of some of the work done on the Park. Ribes comeback is heavy in places.

For details on acreage covered, number of bushes removed, and number of hours of labor consumed, see Omnibus Tables in following Section V F.

E. Status of Control

1. Great Smoky Mts. National Park

a. Pine and Control Area Acreage

Surveys have been completed in the Park both in North Carolina and Tennessee. A recheck of the areas surveyed showed that the figures for pine and control area were in error in last year's report. The revised figures show 10,391 acres with white pine in North Carolina and 45,525 acres with white pine in Tennessee, making a total of 55,916 acres, an increase of 1,825 acres of white pine. The control area figures show 21,523 acres in North Carolina and 76,708 acres in Tennessee, making a total of 98,231 acres, or a reduction of 19,331 acres. Figures on labor used have also been revised downwards: from 2,401 hours to 2,359. For definite figures on initial work and reeradication, as well as for acreage covered by the Park Service and by the Bureau, see Omnibus Tables on pages V D-1 to 4.

b. Local Control

The only ribes-bearing area of any consequence near white pine is found in the Cataloochee Creek watershed in Haywood County, North Carolina. Late maps show a little less than 640 acres of ribes-bearing land in the Cataloochee, some areas being abandoned because the pine population per acre was too low; as compared to the ribes population.

In 1942, the only ribes destroyed were wild bushes in the Cataloochee Creek section, 14,789 bushes being removed from 509 acres, an average of 25 bushes per acre. This reworking took 205 man days of labor, which was provided by the State WPA.

3. Ribes Conditions

No blister rust has ever been found in this National Park. Little, if any, damage to the pines should ever occur even in Catalaocente Creek if the ribes-bearing areas are reworked periodically.

d. Future Work

Some checking of pine areas should be carried out in 1943 to determine whether ribes are coming back, and whether eradication is needed. Eradication should be carried on if ribes conditions show it desirable and labor is available.

Since white pine is on the increase in the Park some areas which now are not considered worth protecting may become worth protecting. It is now known that certain of these below-standard areas have ribes. Periodic inspections of the pine in the Park - say once in five years - should be made to determine whether new areas should be protected, because of the increase in the pine.

Scouting for the rust should be made periodically, at least once every two or three years, preferably in the fall.

5-2 Shenandoah National Park

a. Pine and Control Area Acreage

The latest figures for the acreage of white pine worth protecting show 15,590 acres (the same as in 1941). The control area also remains the same at 26,927 acres. This figure represents the maximum acreage already initially worked. In 1941, the Park Service decided to restrict the acreage on which eradication work would be carried on to about 55 areas with 2,543 acres of white pine, and a control acreage of 7,350 acres. As far as known no change was made in the policy of the Park in this regard in 1942.

b. Surveys

Freeradication surveys and resurveys were carried on in Rappahannock County in 1942, using 161 man days of labor from State WPA project, 2,608 acres of pine being surveyed with 6,400 acres of control area surveyed.

c. Local Control

Ribes eradication in 1942 was carried on by the Bureau with State WPA men. Only areas of high priority were worked, viz., Big Meadows, Elkswallow Gap, Hughes River Gap, Sexton Shelter and Skyland. These areas were located in Madison, Page and Rappahannock Counties.

All eradication in 1942 was rework, 164,500 bushes being destroyed on 1,353 acres with 612 man days of labor. - The cost of eradication for labor amounted to \$1,616.35. Per acre figures are; ribes 121, man days 0.45, and cost \$1.19. This shows a high comeback of ribes and is responsible for the high cost per acre. In 1941 the per acre figures were; ribes 35.8; man days 0.23; cost 57 cents. Cumulative figures for the past 10 years beginning 1933 show 2,461,075 bushes pulled on 43,977 acres with 25,223 man days of labor. This represents initial work and rework. Per acre figures are, ribes 55, and man days 0.55.

d. Canker Elimination

No canker elimination was carried on in 1941 or 1942. In past years 1,031 cores have been treated, 28,637 white pine trees examined, 555 removed and 6,958 pines treated. 24,688 cankers were removed. Adding the treated and removed trees we find 7,003 were infected, representing 28 percent of the pines examined. Some canker elimination was carried on each year from 1935 to 1940 inclusive.

e. Rust Conditions

The blister rust was first found in the Park by Mr. Francis of the Park Service in 1933 at Spittler Knob. The infection on pine dated back to 1926. The disease is generally distributed throughout the Park, the heaviest infections on pine being at the upper elevations, where in some areas 7 to 50 percent of the pines examined in the past have been infected. Canker elimination and repeated ribes removals have materially reduced the number of infected trees. At lower elevations along the Park boundary pine infections are few or entirely lacking owing to the absence of the ribes. Meteorological conditions favor the growth of ribes and the spread of the rust along Skyline Drive, hence control of the disease is more difficult than it is at lower levels where the ribes population is less.

VE-2 Sequoia National Park (Continued)f. Future Work

A Tracker or Agent should be employed each growing season to be responsible for blister rust control work. Mr. Wise is working as agent, May 1943.

Bradication should be continued on those areas needing it, with whatever labor is available. (Two C. P. S. camps are on the Park or near it in May 1943).

Those pine areas not already covered by grid survey should be surveyed by that method.

Canker elimination should be continued wherever the situation warrants it.

V E-3 Blue Ridge Parkway

a. Surveys

Since the Parkway in North Carolina and Virginia is not completed, and will not be completed (according to newspaper advices) until after the war, it has been impossible to accurately survey the white pine in its boundaries. Eleven grids (each one mile square) in North Carolina were post checked in 1942.

b. Pine and Control Area Acreage

In North Carolina surveys show 3,183 acres of control area and 1,165 acres of white pine within the Parkway. No data was available at the end of 1942 on the extent of pine in Virginia. The location of the best pine along the already-constructed Parkway in Virginia was noted on Parkway maps, however. The pine and ribes areas are found on a map of the Blue Ridge Parkway opposite page 13 of Mr. Yost's Virginia Report of 1942.

c. Local Control

Sixty-one ribes were removed in North Carolina from the Parkway, 53 in 1942, and 3 in 1941. In Virginia, Park Rangers secured the cooperation of owners of cultivated ribes bushes along the Parkway and removed 210 bushes. They contacted 112 landowners, and removed bushes at 40 houses. All but one owner offered cooperation (Mr. Willey, Asst. State Entomologist, secured the bushes at this last "hold out" place in April - May, 1943).

Totals for all years, including both Initial work and Rework are: Acreage worked 3,268, number of bushes removed 271, man days of labor 10. (Latter does not include Agent's time in 1941 or Ranger's time in 1942).

From a glance at the map it will be seen that a very considerable acreage of pine area will be found ribes-free. This is true of the Parkway south and west of Adney Gap (about 15 miles south of Roanoke) to the North Carolina line, also of a ten-mile stretch of Parkway, beginning at the James River and running north. This freedom from ribes was observed on a reconnaissance in 1941 or 1942.

d. Rust Conditions

The rust was found along the Parkway in McDowell County, North Carolina on three ribes bushes in the fall of 1941. It was found in 1942 in Virginia in Rockbridge County, in National Park District, Section E, a few miles north of Route 60. Messrs. B. T. Campbell and D. M. Hieb, Park Rangers and Mr. Yost discovered the rust on 8 Ribes rotundifolium out of 8 examined, on September 21, 1942.

e. Future Work

In 1943 eradication and surveys should be carried on with C. F. S. crews within working distance of their camp at Love.

As fast as the unfinished sections of the Parkway are finished the pine areas should be surveyed and the surveys tied in with the rectangular block and grid system established for Virginia and North Carolina.

House sites in the control areas around valuable pine should be rechecked for sprouts or missed bushes.

TABLE #3, SHEET #2
SUMMARY OF RIBES ERADICATION ON NATIONAL PARKS - 1942

NATIONAL PARKS	INITIAL WORK					REERADICATION WORK					TOTALS		
	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number* Ribes Destroyed	Number 8-Hour Man-Days				
Blue Ridge Parkway N.C.	10	58	9	-	-	-	10	58	9				
Blue Ridge Parkway Va.	-	210	(1)	-	-	-	-	210	-				
Blue Ridge Parkway (Both)	10	268	9	-	-	-	10	268	9				
Great Smoky Mts. N.C.	-	-	-	589	14,789	205	589	14,789	205				
Great Smoky Mts. Tenn.	7721	-	45	-	-	-	7,721	-	-				
Great Smoky Mts. (Both)	7721	-	45	589	14,789	205	8,310	14,789	250				
Shenandoah Va.	-	-	-	1,353	164,500	632	1,353	164,500	612				
TOTAL	7,731	268	54	1,942	179,289	817	9,673	179,557	871				

*Wild and cultivated Ribes. (1) Destroyed by Park Rangers, days labor not stated.

TABLE #4, SHEET #3
SUMMARY OF RIBES ERADICATION ON NATIONAL PARKS 1918 - 1942 (INCLUSIVE)

NATIONAL PARKS	NET CONTROL AREA				INITIAL ERADICATION WORK			
	Acreage of White Pine in Net Control Area	Total Acreage (W.P. & prob. Worked)	Acreage Not yet Worked	Gross Acreage Reported Initially	Net Acreage Worked in Control Area	Gross Number Wild & Cultivated Ribes Destroyed	8-Hour Man-Days	
Blue Ridge Parkway N.C.	1,165	3,183	-	3,183	3,183	62	9	
Blue Ridge Parkway Va.	-	No data available	-	-	-	210	(1)	
Blue Ridge Parkway (Both)	1,165	3,183	-	3,183	3,183	272	9	
Great Smoky Mts. N.C.	10,391	21,523	-	21,523	21,523	61,103	1,555	
Great Smoky Mts. Tenn.	45,525	76,708	-	76,708	76,708	137	471	
Great Smoky Mts. (Both)	55,916	98,231	-	98,231	98,231	87,240	2,005	
Shenandoah Va.	15,590	26,927	-	26,927	26,927	1,659,556	12,906	
TOTAL	72,671	128,341	-	128,341	128,341	1,771,169	15,001	

(1) Bushes pulled by Park Rangers. Some adjustments have been made in National Park figures to agree with Permanent Control Records.

TABLE #44 SHEET #21
SUMMARY OF RIBES ERADICATION ON NATIONAL PARKS 1918 - 1942 (INCLUSIVE)

NATIONAL PARKS	REGENERATION WORK					TOTALS (INITIAL AND REWORK)			
	Gross Acreage Reported Reworked	Net Acreage Reported Reworked	Days Spent Destroying Ribes	Days Spent Replanting Native Plants	Gross Initial and Reworked Acreage	Net Acreage Initial and Reworked	Initial Wild & Cult. Ribes	Reworked Destroyed Ribes	Gross Initial and Reworked Acreage
Blue Ridge Parkway (N.C.)	85	85	-	1	3,268	3,268	61	61	3,207
Blue Ridge Parkway (Va.)	-	-	-	-	No data as yet	-	210	210	-
Blue Ridge Parkway (Both)	85	85	-	1	3,268	3,268	271	271	3,000
Great Smoky Mts. (N.C.)	9,653	9,653	16,686	353	30,182	22,150	97,789	97,789	1,403
Great Smoky Mts. (Tenn.)	1,825	1,825	-	-	78,533	78,533	137	137	1,711
Great Smoky Mts. (Both)	10,478	10,478	16,686	353	108,715	100,683	97,926	97,926	2,114
Shenandoah (Va.)	17,046	17,046	303,417	10,277	43,973	43,973	2,461,075	2,461,075	23,223
TOTAL	27,610	27,610	310,103	10,631	153,956	147,924	2,559,272	2,559,272	25,737

(1) Bushes pulled by Rangers. Some adjustments have been made in National Park figures to agree with Permanent Conservation Records.

EXTRACT TAKEN FROM TABLE #5, SHEET #2
SUMMARY OF EXPENDITURES FOR 1942

STATE	BLR # NATIONAL PARKS
Georgia	-
Kentucky	-
Maryland	-
North Carolina	-
Tennessee	-
Virginia	355.00
West Virginia	-
TOTAL	355.00

Funds expended for work in National Parks other than by Park Service are included in BLR-3, under Emergency Projects

REGISTER FIRST CONTROL WORK PERFORMED ON FEDERAL LANDS

SOUTHERN APPALACHIAN STATES

ACREAGE DATA, 1942 and 1946 to 1942 Incl.

NATIONAL PARKS

TABLE # 7B, SHEET # 1

ACREAGE WORKED BY PARK SERVICES

ACREAGE WORKED BY PARK SERVICE											
NAME OF PARK	STATE	Acres in Control Area	Period Calendar Yr.	1942			1943			Subsequent Working	Totals
				First Working	Second Working	Third Working	First Working	Second Working	Third Working		
Blue Ridge Parkway	N. C.	-	1942	-	-	-	-	-	-	-	-
Blue Ridge Parkway	N. C.	-	"	-	-	-	-	-	-	-	-
Great Smoky Mts.	N. C.	-	"	-	-	-	-	-	-	-	-
Great Smoky Mts.	Tenn.	-	"	-	-	-	-	-	-	-	-
Shenandoah	W. Va.	-	"	-	-	-	-	-	-	-	-
TOTALS				-	-	-	-	-	-	-	-

TABLE #79, SHEET #2
REGISTER MUST CONTROL WORK PERFORMED ON NATIONAL PARKS (CONTINUED)
1942

NAME OF PARK	STATE	ACREAGE WORKED BY BUREAU				ACREAGE WORKED BY BOTH AGENCIES				Total Acreage According to Present Ownership
		First Working	Second Working	Subsequent Working	Totals	First Working	Second Working	Subsequent Working	Totals	
Blue Ridge Parkway	N.C.	10	-	-	10	10	-	-	10	-
Blue Ridge Parkway	Va.	-	-	-	-	-	-	-	-	See Below
Great Smoky Mts.	N.C.	-	535	54	589	-	535	54	589	-
Great Smoky Mts.	Tenn.	7,721	-	-	7,721	7,721	-	-	7,721	-
Shenandoah	Va.	-	1,123	230	1,353	-	1,123	230	1,353	-
TOTAL		7,731	1,658	284	9,673	7,731	1,658	284	9,673	-

Combined Figures										
Blue Ridge Parkway		10	-	-	10	10	-	-	10	-
Great Smoky Mts., N. P.		7,721	535	54	8,310	7,721	535	54	8,310	-

1918 - 1942 Inclusive

Blue Ridge Parkway	N.C.	3,183	85	-	3,268	3,183	85	-	3,268	3,183
Blue Ridge Parkway	Va.	No data available	-	-	-	-	-	-	-	-
Great Smoky Mts.	N.C.	18,197	8,556	54	26,807	21,523	5,605	54	30,182	21,523
Great Smoky Mts.	Tenn.	74,003	1,825	-	76,708	76,708	1,825	-	78,533	76,708
Shenandoah	Va.	1,417	12,080	230	13,727	26,921	15,794	1,812	43,973	26,927
TOTAL		97,680	22,546	284	120,510	128,332	17,224	1,716	155,956	128,341

Note: Acreage totals for both agencies combined agree with totals Gross Acreage figures on Omnibus Table, 1A, Sheet 2 as revised April 27, 1943

EXTRACT TAKEN FROM TABLE #6A, SHEET #1
SUMMARY OF ALL EXPENDITURES, 1918-1942 (INCLUSIVE)

NATIONAL PARKS

STATE	RECAPITULATION OF REGULAR FUNDS	RECAPITULATION OF EMERGENCY FUNDS C.C.C.
Delaware	-	-
District of Columbia	-	-
Georgia	-	-
Kentucky	-	-
Maryland	-	-
North Carolina	-	3,271.46
South Carolina	-	-
Tennessee	-	253.00
Virginia	705.00	43,803.00
West Virginia	-	-
TOTALS	705.00	47,424.36

Some funds expended in 1942 for work in National Parks from State WPA Project are not included in the above but included in BLR-3 Project (See footnote page III, F-2).

VI INDIAN RESERVATIONS

A. General Summary

There is only one Indian Reservation in the white pine belt of the Southern Appalachian States, namely, the Qualla formerly called the Cherokee in Jackson and Swain Counties, North Carolina. It is a very small reservation, and is unimportant from a blister rust control standpoint. Only 17 acres of white pine including plantations have been surveyed as yet, with a control zone of 345 acres. No ribes have been found in this control acreage.

Mr. E. B. Teague, State Leader for North Carolina accompanied Chief Blythe of the Cherokees and Mr. E. J. Carlson, the supervisor, on a tour of the reservation in the fall of 1941. A plantation of seven acres at 5,300 feet on Lickstone Ridge was in poor condition, the trees having grown only about four feet in the past five years. It's expected that it will be abandoned and replaced by spruce, an alpine species. In contrast, a three acre plantation at Goose Creek at an elevation of about 2,000 feet was doing well, the trees averaging for the past five years about 18 inches per year. No ribes were found near this latter plantation, the elevation being too low. Ribes were plentiful at the alpine plantation at 5,300 feet, but were not pulled.

VI B to E Various

Table 3, Sheet #3, of the Omnibus Tables giving a Summary of Ribes Eradication in 1942, and from 1936 to 1942 inclusive will be found on the following pages.

SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS - 1942

INDIAN RESERVATIONS	INITIAL WORK				REERADICATION WORK				TOTALS	
	Acreage Worked	Number Ribes Destroyed	8-Hour Man Days	Acreage Worked	Number Ribes Destroyed	8-Hour Man-Days	Acreage Worked	Number Ribes Destroyed	Number Ribes Destroyed	8-Hour Man-Days
NONE									NONE	

TABLE #4A SHEET #5

SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS 1918-1942 (INCLUSIVE)

INDIAN RESERVATIONS	NET CONTROL AREA				INITIAL ERADICATION WORK			
	Acreage of White Pine in Net Control Area	Total Acreage (W.p. & prot. zones)	not yet worked initially	Gross Reported	Net Acreage Worked	Gross No. Wild and Cult. Area	Gross No. Ribes Destroyed	Gross No. 8-Hour Man-Days
Qualla, N. C. (1)	17	345		345	345			

(1) Increases have been made due to corrections based on Permanent Control Records.

TABLE #4A SHEET #6

SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS 1918 - 1942 (INCLUSIVE)

INDIAN RESERVATIONS	REERADICATION WORK				TOTALS (Initial & Rework)			
	Gross Acreage Reported in Control Area	Net Acreage Reworked	Gross Number Wild and Cult. Ribes Destroyed	Gross Number 8-Hour Man-Days Reported	Initial Acreage and Rework	Net Acreage Gross No. Wild & Cult. Ribes Destroyed	Gross Number 8-Hour Man-Days	Gross Number 8-Hour Man-Days
Qualla, N. C.					345	345		1

VII. Miscellaneous

A.

LOCATION OF ELIS PER POST CONTROL WORK IN 1942

BY STATE, PROJECT, ACTIVITY AND COUNTY

GEORGIARegular - Cooperative

LOCAL CONTROL Gilmer and Murray Counties
 OTHER ACTIVITIES Gilmer and Murray Counties
 OFFICES Lumpkin County

KENTUCKYRegular - Cooperative

LOCAL CONTROL Wolfe County
 OTHER ACTIVITIES Bath, Bourbon, Clark, Fleming, Laurel, Madison,
 McCreary, Menifee, Montgomery, Nicholas, Rockcastle,
 Rowan, Whitley and Wolfe Counties

MARYLANDRegular - Cooperative

LOCAL CONTROL Garrett County
 OTHER ACTIVITIES Allegany and Garrett Counties
 OFFICES Allegany County

NORTH CAROLINARegular - Cooperative

LOCAL CONTROL Buncombe, Haywood, Jackson, Madison, Mitchell,
 Watauga, and Yancey Counties
 OTHER ACTIVITIES Buncombe, Haywood and Watauga Counties
 OFFICES Buncombe, Haywood and Watauga Counties

State WPA

LOCAL CONTROL Buncombe, Haywood, Transylvania and Watauga Counties
 OTHER ACTIVITIES Buncombe, Haywood and Watauga Counties
 OFFICES Buncombe, Haywood, Watauga and Avery Counties

VII A (Continued)

TENNESSEERegular - Cooperative

LOCAL CONTROL Carter, Johnson and Sullivan Counties
 OTHER ACTIVITIES Carter and Johnson Counties
 OFFICE Carter and Knox Counties

State WFA

LOCAL CONTROL Bledsoe, Blount, Carter, Johnson, Rhea and Sullivan Counties
 OTHER ACTIVITIES Bledsoe, Carter, Johnson, Rhea and Sullivan Counties
 OFFICE Knox County

VIRGINIARegular - Cooperative

LOCAL CONTROL Augusta and Highland Counties
 OTHER ACTIVITIES Alleghany, Amherst, Augusta, Bedford, Bland, Carroll, Craig, Floyd, Franklin, Giles, Grayson, Montgomery, Nelson and Page Counties
 OFFICES Augusta and Rockingham Counties

State WPA

LOCAL CONTROL Augusta, Bath, Madison, Page, Rappahannock, Rockbridge and Rockingham Counties
 OTHER ACTIVITIES Augusta, Highland and Rappahannock Counties

WEST VIRGINIARegular - Cooperative

LOCAL CONTROL Greenbrier, Mercer, Monroe, Summers, Pocahontas, Pendleton and Tucker Counties
 OTHER ACTIVITIES " " " " " " " " " " " "
 OFFICES Pocahontas, Pendleton and Mercer Counties

State WPA

LOCAL CONTROL Pendleton County
 OTHER ACTIVITIES " " " "
 OFFICE " " " "

TRANSPORTATION

VII E

At the beginning of January 1942 there were on hand 55 trucks, 3 station wagons and 3 passenger cars in the Southern Appalachian Region. While many of these trucks and cars were old, they were more than ample for our use in 1942. In fact, on account of the cessation of WPA work, it was found in early summer that there was a surplus of trucks. On instructions from Washington 19 of these trucks which could be spared were listed as worn out or surplus and were sold by board of survey. This left 40 trucks on hand January 1, 1943, including 1 station wagon and in addition 3 passenger cars. From then to June 1, 1943, 2 trucks were disposed of, leaving 38 trucks and 3 passenger cars on hand in mid summer.

There is need of at least one if not two new passenger cars in fiscal year 1944, since one of our cars, the 1936 Chevrolet Sedan, has traveled over 90,000 miles and the 1939 Pontiac and 1940 Ford have both traveled over 50,000 miles.

Of the trucks remaining in the region on June 1, 1943, six are ton and a half, one of '38, 5 of '39, and the remaining 32 are half ton pickup and delivery trucks, of which 17 are of 1935 model, 4 of 1936 model and 11 are of 1939 model. In other words we have 16 - 4 year old trucks

1 - 5 year old trucks
4 - 7 " " "
and 7 - 8 " " " making a total of
38 trucks

The following table shows the data on each truck and passenger car in the region as of December 31, 1942, with total mileage run, and other pertinent data as well as data on trucks disposed of during 1942.

Present License No.	Engine Number	Make	Year Model	Ton- nage	State	Speedometer Reading 12-31-42
A5-326	PT81-22537	Plymouth Pickup	1939	1 1/2	Va.	23,994
A5-327	K24-66381	Chevrolet	1939	1 1/2	Ga.	41,024
A5-328*	1-5034-1-9	Chevrolet Sedan	1936	5 Pass.	Va.	88,093
A5-329	T12-24165	Dodge Pickup	1935	1 1/2	Ga.	47,395
A5-330	H19-23655	Chevrolet Pickup	1939	1 1/2	N. C.	20,192
A5-331	T12-25986	Dodge Pickup	1939	1 1/2	N. C.	48,687
A5-332	PT81-22350	Plymouth Pickup	1939	1 1/2	N. C.	28,551
A5-333**	T12-25043	Dodge Pickup	1935	1 1/2	N. C.	46,636
A5-334**	T12-24546	Dodge Pickup	1935	1 1/2	N. C.	47,292
A5-335	T12-26243	Dodge Pickup	1935	1 1/2	N. C.	66,120
A5-336	T12-25435	Dodge Pickup	1935	1 1/2	N. C.	50,349
A5-337**	T12-25392	Dodge Pickup	1935	1 1/2	N. C.	51,618
A5-338	T74-6519	Dodge Stakebody	1939	1 1/2	Va.	43,550
A5-339	T74-6773	Dodge Stakebody	1939	1 1/2	Va.	26,937
A5-340	T12-25805	Dodge Pickup	1935	1 1/2	Term.	55,222
A5-341	T74-6596	Dodge Stakebody	1939	1 1/2	Ga.	39,383
A5-342#	K6-173564	Chevrolet Sta. Wagon	1936	1 1/2	Term.	51,117
A5-343	PT81-21922	Plymouth Pickup	1939	1 1/2	Va.	24,529
A5-344	T12-25885	Dodge Pickup	1935	1 1/2	Va.	37,474 not used in 1942
A5-345	PT81-22118	Plymouth Pickup	1939	1 1/2	Term.	29,580
A5-346	T74-6464	Dodge Stakebody	1939	1 1/2	Term.	34,330
A5-347	T12-25423	Dodge Pickup	1935	1 1/2	Va.	46,611 not used in 1942
A5-348	T12-24758	Dodge Pickup	1935	1 1/2	Va.	45,777

License No.	Registration Number	Make	Year Model	Year Age	State	Appraised Value Realizing 12-31-42
A5-349	T12-24610	Dodge Pickup	1935	1	Va.	63,027
A5-350	PT31-21907	Plymouth Pickup	1939	1	Va.	41,067
A5-351	T12-22400	Dodge Pickup	1935	1	Va.	50,193
A5-352	T12-25318	Dodge Pickup	1935	1	Va.	53,623
A5-353	T12-24472	Dodge Pickup	1935	1	Va.	62,237
A5-354	T12-26496	Dodge Pickup	1935	1	Va.	62,360
A5-355	PT31-22136	Plymouth Pickup	1939	1	Va.	21,887
A5-356	T7A-6770	Dodge Stakebody	1939	1	Va.	36,693
A5-357	T12-25119	Dodge Pickup	1935	1	Va.	67,206
A5-358	PT31-22382	Plymouth Pickup	1939	1	Tenn.	22,206
A5-359	T12-92275	Chevrolet Stakebody	1938	1	Va.	36,174
A5-360	M-5745638	Chevrolet Delivery	1936	1	Va.	72,901
A5-361	T12-24697	Dodge Pickup	1935	1	Va.	56,127
A5-362	6505276	Pontiac Sedan	1939	5	Va.	50,343
A5-363*	12-5315287	Ford Sedan	1940	5	W. Va.	50,035
A5-364	PT31-21923	Plymouth Pickup	1939	1	W. Va.	16,455
A5-365	M-5745721	Chevrolet Delivery	1936	1	W. Va.	63,924
A5-366	M-5728114	Chevrolet Delivery	1936	1	W. Va.	73,555
A5-367	T12-25465	Dodge Pickup	1935	1	W. Va.	34,515
A5-368	T12-24492	Dodge Pickup	1935	1	W. Va.	49,542
A5-370	T12-25413	Dodge Pickup	1935	1	Va.	43,687
A5-371	M-5752877	Chevrolet Delivery	1936	1	Va.	59,893
A5-857**	T37-19338	Chevrolet Stakebody	1933	1	Tenn.	57,498
43-109**	T38-55385	Chevrolet Stakebody	1933	1	W. Va.	42,840
None **	M-5745617	Chevrolet Delivery	1936	1	Tenn.	58,439
None**	K-5742052	Chevrolet Pickup	1936	1	Va.	57,785
A6-887**	K-5728086	Dodge Pickup	1933	1	Va.	75,667 in 1941
A11-345**	M-5745710	Chevrolet Delivery	1936	1	Va.	64,589
A11-616**	T12-24414	Dodge Pickup	1935	1	Va.	55,876
A12-484**	T12-24490	Dodge Pickup	1935	1	Va.	55,866
A14-221**	T12-24582	Dodge Pickup	1935	1	Va.	38,617
A14-201**	T12-24766	Dodge Pickup	1935	1	Va.	38,710
Formerly 54-608**	2411-2236	Rec Stakebody	1935	2	Va.	36,085
Formerly A5-861**	T12-26169	Dodge Pickup	1935	1	Va.	47,028
A14-207**	T12-26187	Dodge Pickup	1935	1	Va.	73,068 Not used in 1942
A11-612**	T12-26369	Dodge Pickup	1935	1	Va.	67,335
A11-617**	T12-26504	Dodge Pickup	1935	1	Va.	53,845
Formerly A5-348**	K6-175122	Chevrolet Sta Wagon	1935	1	Tenn.	33,787
Formerly A5-356**	K-571849	Chevrolet Pickup	1936	1	Va.	62,745

* Passenger cars

** Sold in 1942

Sold in 1943

Transferred to Office of Emergency Management 2/1/43

VII C INFORMATIONAL ACTIVITIES

During the calendar year 1942, informational activities were carried on in the six States of Georgia, Kentucky, North Carolina, Tennessee, Virginia and West Virginia.

Tabulation of Informational Services-Calendar Year 1942

Activity	Ga.	Ky.	N. C.	Tenn.	Va.	W. Va.	All States
Meetings	11	-	217	-	3	5	25 40
Attendance at Meetings 1,442	-	-	2228	-	382	915	4767
Items Published	1	-	10	5	-	3	19
Demonstrations	-	-	1	-	-	-	1
Initial Interviews	53	34	104	184	219	103	697
Follow-up Calls	10	-	-	12	-	3	25
Individuals Instructed	-	-	-	6	211	30	247
Publications Distributed	1,257	-	1,240	608	124	100	3,029
Posters Placed	46	-	34	9	7	14	112
Exhibits	1	-	-	-	-	-	1
Informal talks to Teachers Schools	3	-	-	-	-	-	3

The following notes concern informational work somewhat out of the ordinary.

A well illustrated article by Milledge Murphy, Jr., on the blister rust appeared in Outdoor Georgia of March 1942, published by the Georgia Department of Natural Resources of Atlanta. The title was "Georgia Protects White Pine."

Mr. Zimmer exhibited the film, "The Story of White Pine" or the Georgia Blister Rust Film at 11 meetings in Georgia, the attendance being 1,442.

In North Carolina the Eastern blister rust sound film was shown seven times in December to 980 people in Asheville and vicinity. It was very well received and several requests were made for showing it at other schools. One program was given over the Boone, North Carolina radio station, WDRS, on which Agent Whitman was interviewed by the Station Announcer regarding blister rust control work.

In October, Agent Whitman conducted an education tour in Watauga County, showing the North Carolina movie strip, blister rust specimens, posters, etc. at six schools, including teacher's college (12 showings before 578 persons, including pupils, teachers and principals).

VII C(Continued)

In Tennessee, Mr. Tanksley in late December showed the motion picture sound film before a group of 14 in Nashville, including Mr. Charles Poe, the Commissioner of Conservation; Mr. Turner in charge of Fish and Game; Mr. Cowan, and office Secretaries of Conservation, and Mr. Hazard, the State Forester. Early in the year Agent Stegall was interviewed by a reporter for the Chattanooga News Times Press, and the latter worked up a very interesting blister rust control article, using photographs supplied by our office. The article covered over a half page.

In Virginia, two days were spent on education^{al} work with the Girl Scouts from Camp Mayflather on North River in Augusta County. On each day a group of about 20 girls was taken into the field and after finding the rust on pine and ribes, the nature of the disease and its control was discussed, a small area was worked, and the wild ribes bushes on it were destroyed. This makes the sixth year of cooperation with the Girl Scouts who come from the District of Columbia.

Mr. Yost gave a talk on blister rust control before the fourth, fifth and sixth grades at the Main Street School in Harrisonburg, Virginia before about 300 pupils.

In Richmond, Virginia, the motion picture sound film on blister rust and training methods film from the Army were shown to State leaders Yost and Welch, and to our cooperators Messrs. French and Willey, to Park Service Foresters and several others. Additional copies of the Army booklet on Training Methods have been furnished several of the State leaders.

Dr. Ashcroft had an article in West Virginia Conservation in January on "The White Pine Disease."

In August 1942, an exhibit was placed at the Pocahontas County Fair, an annual six day event. Several thousand people viewed the exhibit which included fresh specimens of blister rust infections on both the ribes and white pine hosts. This was one of the few fairs held in West Virginia in 1942.

The western blister rust control film "The Story of White Pine" was shown to the Hillsboro Parent Teachers Association, and to the student bodies of Princeton, Marlinton and Greenbank High Schools, as well as to the Marlinton Rotary Club - the total attendance at meetings being 915. Specimens of blister rust, Cronartium ribicola on white pine, and also the fungus Caliciopsis pini on white pine were collected and sent to Professor J. G. Leach, Pathologist at the West Virginia University.

Two Ribes Ecology Seminars were sent out from the Richmond Office to all agents and State leaders in the Region. These are for training purposes. In addition, two Technical Memoranda Nos. 3 and 4 were sent to the field men of the Region. Mr. Yost wrote the first (No. 3) entitled "A Comparison of Blister Rust Infection on Pine in Seven Protected Areas and Ten Unprotected Areas in Garrett County, Maryland Six or More Years After the Initial Working."

Messrs. Pierce and Welch wrote the second (No. 4) entitled, "An Analysis of Ribes Eradication on Thirty Five Areas in Pocahontas County, West Virginia, Which Were First Worked in 1934 to 1936, and Reworked in 1941."

A list of all publications on the blister rust put out in the Southern Appalachian States in 1942 appears on Page II D-6a.

VII DQUARANTINE ENFORCEMENT

In Maryland, the State Plant Pathologist, Dr. Jenks received 305 applications for permits for shipping cultivated currants and gooseberries into the State, covering 4,235 bushes. 148 permits were approved for 3,356 bushes, while 157 permits were rejected covering 879 bushes.

In Virginia, the Chief Botanist and State Entomologist, Mr. G. T. French, issued permits to 26 nurserymen for shipping into Virginia cultivated currants and gooseberry plants. Many requests for shipping cultivated ribes into the white pine counties of the State were refused. No record however is kept of the exact number of requests or bushes denied entrance into the State.

Mr. Welch reports June 5, 1943 that "Mr. Craig, State Entomologist has issued 352 permits for shipment of ribes into the non pine-bearing counties of the State in the past year. He stated that requests for shipment of ribes into the pine-bearing counties are becoming fewer with each passing year. This year, less than a dozen requests were made for ribes shipment permits into the pine sections of the State, all of which were refused. Thus, it is felt that the population in the white pine sections is beginning to realize the importance of excluding ribes."

No report is available on permits granted or denied for other States in the region.

VII EFIELD HEADQUARTERS

A change for the better was made in the Tennessee headquarters of the State leader in Knoxville in October 1942. Mr. Tanksley's Office was formerly in two electric lighted inside rooms in the basement of the Federal Building. He is now well situated in Room 307 of the Federal Building but still retains Room No. 7 in the basement for storage.

Our field office in Cumberland, Maryland at the Court House with District Forester Johnson was closed in June 1942, when the State leader, Mr. H. E. Yost, moved to Marlinton, West Virginia. Mr. Yost had occupied office space with the District Forester since September 1933, when control work began in the State. On August 16, Mr. Yost moved the office furniture and other Maryland equipment from Cumberland to Harrisonburg, Virginia.

VII F. WHITE PINE

1. Plantations

Planting of white pine is on the increase in North Carolina and Tennessee, the various agencies pushing this work being the A. A. A., the extension foresters, the State foresters, the county agents, the Tennessee Valley Authority and the Soil Conservation Service, and such private organizations as the Champion Fibre Company of Canton, North Carolina. As far as possible, the blister rust control organization has cooperated with these organizations in inspection of the plantings and in eradication of ribes within the control zones established. The plantings are so numerous however and many so small that it has been impossible to inspect all of them. Where plantings have been made from S. C. S. camps and these have been abandoned and the planting project closed, as it was in Monroe County in West Virginia, it has been impossible to learn of the location of the plantings let alone the number of trees planted and acreage planted to white pine.

In August 1942 Mr. Tanksley of Tennessee contacted a T. V. A. man at Bristol and secured location of T. V. A. plantations of white pine for Johnson, Carter and Union Counties which he spotted on our maps.

In North Carolina Mr. Teague reported in September 1942 that work on A. A. A. white pine plantations in Madison and Mitchell Counties was completed by Regular Cooperative workers. To date no native ribes have been found near any of the A. A. A. plantations that have been worked this year.

Mr. Teague in the spring of 1943 has taken steps to inform the A. A. A. county committees of the location of ribes-free counties in the white pine belt and of ribes free sections in those counties having wild ribes, so that the prospective white pine planters will be careful where they plant the pine and if in ribes-bearing zones will remove those bushes at time of planting.

Through 1942 most of the white pines planted by the U. S. Forest Service, the National Park Service and the various States on State, Forest or Park lands, have been protected from the rust, many of the earlier plantations made by the George Washington National Forest having been worked several times. In North Carolina nearly all of the plantations on the Pisgah National Forest have been found ribes-free, while the few bearing ribes have been worked once or twice, and are in little danger from the rust if eradication is repeated at 3 to 5 year intervals.

In Delaware, white pine planting has been on the decrease since 1939. According to data from State Forester W. S. Taber, there had been in the spring of 1940 18 persons receiving 25,700 white pines from the State Forest Nursery. In the spring of 1941, 14 persons received 17,600 white pines, and in the spring of 1942, 9 persons received 7,500 white pines. The trees shipped were mostly three or four year old seedlings, but some were six year old transplants (3-3 stock). In these three years 50,800 trees were planted by 39 persons or firms. According to reports from H. E. Yost there were through 1940, 173.3 acres of white pine located in the State. To this may be added about 25.1 acres (for 25,100 trees) making a total through 1942 of 198.4 acres, ^{most} of which has been planted.

VII F (Continued)

2. Logging

No accurate figures are available on the extent of cutting white pine by the logging industry or by farmers for pulp. For several years, however, cutting white pine has been on the increase both on National as well as on private holdings. Since however most of the stands are not pure white pine or of even age, this cutting will not materially affect the acreage of pine to protect. The older trees are cut, and sometimes the diameter limit is as low as six inches on private sales. The Forest Service has established a much higher minimum diameter, which on the George Washington National Forest in Virginia is 18", I believe. On the Monongahela National Forest in November, 235,000 feet of white pine in standing trees were offered for sale near Neola in Greenbrier County. No trees were to be cut under 32 inches in diameter. No bids under \$9.00 were to be considered.

To cite a few more examples, Mr. Zimmer wrote in October 1942, "Mr. Clint Johnson, Ranger for the Blue Ridge District reports that 875,000 board feet of white pine has been cut on Emery Creek in Murray County in the last sixty days and this is about one-third of what will be cut. The Forest Service is also selling a large tract of timber on Mountain Creek in Gilmer County. This also has splendid white pine."

Mr. Zimmer reported on August 8, 1942 on the size of white pine in Georgia, "One of the logs recently cut in Rabun County produced 1,087 feet. This was sent to a mill at Clayton, which cuts 4,000 board feet per hour."

Mr. Yost writes concerning the lumbering of white pine in Virginia. "The average per year for recent years seems to be approximately 4,000,000 board feet. The increased demand for white pine lumber in war industries has increased the rate of cutting. A reasonably complete survey was made of Highland County, which indicates that there were 3,300,000 board feet cut during 1942 on privately-owned land. The average stumpage price was about \$7.00 and the mill price was about \$25.00 per thousand respectively. After discussing the matter with lumbermen and applying the Highland County data to the state as a whole, the following estimate is given for the white pine lumber industry for the state in 1942:

Total Cut	20,000,000
Stumpage Value	\$140,000.00
Mill Value	\$500,000.00

White pine is definitely increasing rapidly over the mountainous counties of the state. This appears particularly true during the last 20 years. In many instances it is definitely replacing the chestnut. The increased control of forest fires is perhaps the most important single factor. Timber stand improvement work and planting by the U. S. Forest Service, Park Service and Soil Conservation Service as well as other Federal and State agencies, also is important."

VII MISCELLANEOUS

G. Financial. Certain tables are included for the states, some for the Southern Appalachian States do not fit in with the preceding work and financial projects, and are therefore included in this section.

Comparison of Expenditures for the Southern Appalachian States
From 1928 to 1942 Inclusive (incl. Yrs.)

Agency	1938	1939	1940	1941	1942
Federal	\$197,248.68	\$205,697.37	\$217,387.38	\$197,011.47	\$93,309.03
State & Coop. Agencies	32,273.52	22,341.19	14,255.42	13,276.78	23,990.49
Combined Federal & State	229,522.20	228,038.56	232,642.80	210,288.25	117,299.52

Total 1928 - 1942 Inclusive

Federal \$1,602,317.07

State & Coop. Agencies

Indirect Aid 103,423.52

Direct Aid 57,323.24

Sub total State & Coop. 160,746.76

GRAND TOTAL - Federal

State, etc. \$1,763,063.83

Resume of Federal WPA Expenditures for Southern
Appalachian Region by Appropriations

Fiscal Year	Appropriation	Delaware	Georgia	Maryland	North Carolina
1936 & 1937	001089	-	\$20,272.95	\$21,384.76	\$33,956.59
1937	201085	-	16,764.23	7,321.75	55,885.34
1938	501082	-	21,993.24	7,525.37	33,957.01
1938	501009	-	-	-	-
1939	701082	\$2,426.10	19,336.11	15,099.08	24,013.09
"	701009	-	-	-	-
"	701089	-	-	-	-
1940	201087	1,596.13	17,126.99	9,221.61	19,655.62
"	201008	-	-	-	-
1941	401087	-	12,385.74	6,252.51	9,523.63
"	401008	-	-	-	-
1942	801087	-	7,232.75	1,538.76	12,005.61
"	801008	-	-	-	-
TOTAL		\$4,422.23	\$116,712.31	\$73,812.75	\$188,978.39

Fiscal Year	Appropriation	South Carolina	Tennessee	Virginia Outside Richmond	Richmond Office*	Virginia Including Richmond	West Virginia
1936	001089	\$1,876.91	\$15,919.97	\$28,167.42	\$5,108.06	\$33,296.28	\$23,405.24
1937							
1937	201085	-	18,077.52	33,347.01	5,044.50	38,991.51	42,405.11
1938	501082	-	44,534.85	37,559.39	4,973.47	47,332.78	51,099.15
1938	501009*	-			2,799.92		
1939	701082	-	38,552.97	32,011.50	3,207.46		40,014.01
	701009*	-			6,232.60	42,018.61	
	701089*	-			566.95		
1940	201087	-	21,735.42	17,321.19	1,821.90	25,727.28	18,620.12
	201088*	-			6,584.19		
1941	401087	-	15,902.46	21,644.63	1,109.49	27,220.96	27,836.24
	401008*	-			4,466.73		
1942	801085	-		8,715.41	426.85	11,172.61	18,155.30
	801006*	-			2,030.35		
TOTAL		\$1,876.91	\$14,773.16	\$181,386.61	\$44,373.42	\$225,760.03	\$215,563.17

The above records are complete for the Federal WPA transactions and agree with the Treasury

*Richmond, Virginia Office only.

Regular Funds Expended F. Y. 1942
(Appropriation Symbol 1222215(13)031)

State	Fiscal Year 1942			7/1-12/31/41		1/1-6/30/42	
	3101.14	3103.14	Total	3101.14	3103.14	3101.14	3103.14
Ga.	\$796.50 ⁽¹⁾	\$1,033.60	\$1,830.10	\$18.00	-	\$2,117.51	\$1033.60
Md.	3,164.79	-	3,164.79	1,417.93	-	2,416.37	-
N. C.	298.10	353.50	651.60	122.50	-	1,682.93	353.50
Penn.	1,470.07	221.25	1,691.32	803.65	-	2,172.80	221.25
Va.	63.58	308.93	372.53	-	-	1,569.96	308.98
W. Va.	1,630.08	628.48	2,258.56	131.00	251.66	3,005.46	376.82
Rd. Office	11,394.28 ⁽¹⁾	-	11,394.28	6359.29	-	-	-
TOTAL	\$21,817.40	\$2,545.81	\$24,363.21	\$8852.37	\$251.66	\$12,965.03	\$2294.15

(1) The Richmond Office expenditures were prorated to the States beginning January 1, 1942.

VII Miscellaneous (Continued)

Regular Funds Expended (Continued)

7/1-12/31/42		For Calendar Year 1942		
State	3101-14	3103-14	3101-14	3103-14
Ga.	\$1,936.81	\$3,704.05	\$1,054.30	\$4,737.65
Md.	7.80	-	2,424.17	-
N. C.	3,828.19	1,462.57	5,511.12	1,816.07
Tenn.	2,938.48	-	5,111.28	221.25
Va.	4,286.46	115.80	5,856.42	125.78
W. Va.	4,415.48	1,395.19	7,420.21	2,271.01
TOTAL	\$17,413.82	\$7,177.61	\$50,373.25	\$9,471.76

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Report of

BLISTER RUST CONTROL IN THE NORTH CENTRAL REGION, 1942

by

Henry N. Putnam
Senior Pathologist

and

Leiton E. Nelson
Associate Forester

BLISTER RUST CONTROL, NORTH CENTRAL REGION, 1942

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Summary of Blister Rust Control Program, December 31, 1942

North Central Region

Blister Rust Conditions

White pine blister rust is continuing to spread toward the extremities of the white pine range of the North Central Region. Intensification of the rust continues at an increasing rate through the unprotected pine stands of the northern parts of the three Lake States.

During 1942, infected white pines were found for the first time in Gogebic, Ionia and Oscoda Counties in Michigan, Koochiching County in Minnesota and Marquette County in Wisconsin. Infected ribes bushes were found for the first time in 11 counties in northern and western Iowa and Douglas County in Minnesota. Infected ribes have been found in all seven States of the region and infected pine in all States except Illinois and Indiana.

White Pine

White pine is increasing in acreage every year due to natural reproduction and planting. At the end of 1942 there were 1,172,327 acres of white pine considered worth protecting in the North Central Region. An increase of 49,779 acres of pine, or 4.2 percent has occurred since 1941. The value of white pine in the North Central Region is conservatively estimated to be approximately \$103,709,795.

Local Control, 1942

During 1942, local control work was accomplished with Regular-cooperative, State-W. P. A., Indian Service C. C. C. and Forest Service Regular funds. A small amount of work was also done with S. C. S. and Civilian Public Service funds.

Local control work accomplished is shown as follows:

	: Acres White	:	:	: Man-days
Eradication	: Pine Protected	: Acres Worked	: Ribes Destroyed	: Used
Initial	: 25,461	: 106,090	: 1,517,697	: 8,289
Re-eradication	: 48,701	: 128,791	: 2,340,444	: 16,804
Total	: 74,162	: 234,881	: 3,858,141	: 25,093

Status of Control on December 31, 1942

Ownership Class	Total Control Problem		Net Control Area			
			Acres		Percent	
	White Pine	Control Area	Initially Worked	On Maintenance	Initially Worked	On Maintenance
U. S. F. S.	197,275	427,666	239,078	65,923	60.5	20.0
U. S. I. S.	49,676	96,416	76,573	3,369	79.4	3.4
U. S. Park Service	642	8,835	2,765	147	97.5	5.1
Non-Federal Public	298,384	785,716	611,985	148,891	77.8	18.9
Private	626,380	2,799,651	1,781,957	264,895	63.6	9.4
Total	1,172,357	4,112,284	2,742,558	409,925	65.4	12.4

Nursery Sanitation

During 1942, sanitation work was done at 15 nurseries, one Forest Service, six State and eight private. These 15 nurseries contained approximately 6,206,300 white pine seedlings and transplants. A total of 26,424 cubes was removed from 3,660 acres of control area by an expenditure of 135 man-days for labor. A large proportion of the nurseries in the Region are now on a maintenance basis and require only periodic inspections.

Cultivated Black Currant Elimination

Initial cultivated black currant elimination work was done in Iowa, Michigan and Ohio where 36,248 locations were inspected. A total of 1,392 bushes was removed from 310 locations with an expenditure of 1,063 man-days.

Recheck eradication in Iowa, Michigan and Wisconsin resulted in the removal of 883 bushes from 214 locations. A total of 93,511 properties was inspected with an expenditure of 3,790 man-days.

Future Control Work

During the present war period it will be impossible to provide protection for the remaining unprotected pine areas, or keep up with the increase of pine acreage due to natural and artificial reforestation. It will be necessary to confine control work to those areas most in need in order to hold losses to a minimum.

More use of women and teen-age boys for control work is recommended during this war period. The use of this source of labor taken from non-agricultural communities will not interfere with food production yet provide help in the initial work of saving the white pine.

Summary of Blister Rust Control, 1942

Illinois

Blister Rust Conditions

No rust has been found on white pines to date, although 73,564 trees in 27 counties were examined in 1942. Few inspections for rust on ribes were made and none found infected. Previously infected ribes, chiefly Ribes nigrum, had been found in 10 northern counties.

White Pine

Except for a few scattered locations, white pine is chiefly planted. Its use as a shelterbelt tree and in reforestation is increasing. It thrives on Illinois soils. Primarily it is planted in the northern third of the State, although good growth and survival is obtained in the southern part. The value of white pine in Illinois is estimated to be \$1,600,000.

Local Control, 1942

Ribes eradication in 1942, performed entirely on Regular-cooperative funds, is shown as follows:

Ownership Class	Acres White Pine		Acres Worked	Ribes Pulled	Man-days Used
	Protected All Planted				
		<u>Initial</u>			
State and County	11		379	1,851	17
Private	92		1,663	52,256	89
Total Initial	103		2,042	54,107	106
		<u>Re-eradication</u>			
State and County	499		1,798	48,408	231
Private	146		565	7,158	77
Total Re-eradication	645		2,363	55,566	308
Grand Total	748		4,405	109,673	414

Status of Control, December 31, 1942

Ownership Class	Total Control Problem		Net Control Area			
	: Acres		: Acres		: Percent	
	: Net Acres		: Initially: On Main-		: tially : On Main-	
	White	Control	Initially:	On Main-	tially :	On Main-
	Pine	Area	Worked	tenance	Worked	tenance
State, County	2,753	10,760	9,660	670	89.8	6.2
Private	771	19,953	7,074	717	35.5	3.6
Total	3,524	30,713	16,734	1,387	84.5	9.8

Nursery Sanitation

Five private and one State nurseries growing 367,000 white pines were given their fifth annual working. By removing 122 cultivated black currants and 66 wild ribes from 1,810 acres, 1,315 acres of nursery site were protected at a cost of 29 man-days. These nurseries are in a good sanitary condition with respect to blister rust.

Cultivated Black Currant Elimination

There is no systematic C. B. C. elimination program in Illinois. In connection with nursery sanitation, reported above, the 122 R. nigrum destroyed in 1942 brought the total eliminated to date to 713 bushes.

Future Control Program

There still remains a considerable acreage of white pine to be mapped. Owners of small plantings of white pine will be furnished literature on control operations and encourage to do their own protection work. The use of Federal and cooperative funds will be limited to control work around layer stands. So far as facilities permit, the larger prospective planting sites will be examined for ribes and recommendations made to owners for or against planting white pine.

Summary of Blister Rust Control, 1942

Indiana

Blister Rust Conditions

No infection was found on either ribes or white pine in 1942. Rust on R. nigrum has previously been reported from four northern counties, but no infection on white pine has been found.

White Pine

Except for a few acres of natural pine along Lake Michigan in the

northwest corner of Indiana. white pine occurs as plantations. It has been quite extensively planted in the northern and southern thirds of the State. In the south, the tree grows fast due to the long growing season. Ribes are scarce to absent in the southern one-third of Indiana.

At the present time there are approximately 7,249 acres of white pine of which 6,858 acres are planted and 391 acres are of natural growth. The present value per acre of pine has been computed at \$117.00. The future value of the present timber crop is computed at \$92.00, making a total value per acre of \$209.00. At this present value plus future timber value, or \$209.00 per acre, the 7,249 acres of white pine in Indiana is valued at \$1,515,041. Practically all of the pine is in State, Municipal and private ownership.

Local Control Performed, 1942

Ribes eradication was performed on State and private lands with Regular-cooperative funds as follows:

Ownership Class	Acres W. P. Protected, all Planted	Acres Worked	Ribes Pulled	Man-days Used
		Initial		
State	9	734	2,202	20
Private	361	5,653	14,005	125
Total Indiana	370	6,387	16,207	145
		Re-eradication		
State	353	2,970	43,767	124
Grand Total	723	9,357	59,974	269

The present status of control is shown as follows:

Ownership Class	Total Control Problem Net Acres		Net Control Area			
			Acres		Percent	
			Initially Worked	On Main-tenance	Initially Worked	On Main-tenance
Non-federal	White Pine	Control Area				
Public	2,024	17,897	16,478	4,362	92.0	24.3
Private	5,225	111,596	55,928	28,767	50.1	25.7
Total	7,249	129,493	72,406	33,129	55.9	25.5

Nursery Sanitation

No nursery sanitation work was performed during 1942. All State and

Federal nurseries are practically on a maintenance basis. It is planned, however, to give these nurseries a scout working in 1943.

Cultivated Black Currant Elimination

Twenty-three inspections for cultivated black currants were made in Indiana during 1942, but no bushes were destroyed. Of the known locations all are sufficiently far removed from white pine to present any danger.

Future Control Program

The future control program in Indiana involves mainly the protection of new pine plantations as they become established. The planting of white pine in southern and central Indiana should be encouraged because of the scarcity of ribes within this portion of the State. Individual pine owners and planters should be urged, through a strong educational campaign, to protect their white pine from blister rust.

Summary of Blister Rust Control, 1942

Iowa

Blister Rust Conditions

During 1942, rust on ribes was found for the first time in 11 counties, bringing to 33 the total counties in which infected ribes have been found. No infected pines were located in 1942. Previously infection on natural pines had been discovered in Dubuque County, and on nursery stock in Story and Lyon Counties. Rust has now been found in practically all of the counties in the northeastern third and some in the northwestern corner of the State.

White Pine

Except for a few locations of natural stands in northeastern Iowa, white pine is extensively used in approximately 12,000 shelterbelts chiefly in the northeastern third of the State. These shelterbelts are highly valued by farmers because of their appearance and protection against wind and sun. According to an evaluation survey in 1938, the owners themselves placed an average value of \$775 per shelterbelt, or \$9,300,000 in the State.

Local Control in 1942

Ribes eradication in 1942 performed entirely on privately-owned lands with State-W. P. A. and Regular-cooperative funds is shown as follows:

Agency	Number of Areas	Acres W. P. Protected, all Planted	Acres Worked	Ribes Pulled	Man-days Used
		Initial			
State-W.P.A.	400	142	1,797	51,547	798
Regular-Coop.	179	58	708	14,519	344
Total Initial	579	200	2,505	66,066	1,142
		Re-eradication			
State-W.P.A.	116	41	573	12,475	145
Regular-Coop.	58	29	266	2,868	86
Total Re-erad.	174	70	839	15,343	231
Grand Total	753	270	3,344	81,409	1,373

Status of Control, December 31, 1942

Ownership Class	Total Control Problem		Net Control Area				
	Net Acres						
	Number of Areas	Acres W. P. Area	Acres Control Initially Worked	Acres On Main-tenance	Percent Initially Worked	Percent On Main-tenance	
Indian Service	1	10	206	206	0	100.0	0.0
State	14	285	2,245	1,535	3	68.4	Tr.
Private	11,985	4,705	57,549	32,730	10,355	56.9	18.0
Total	12,000	5,000	60,000	34,471	10,358	57.5	27.2

Nursery Sanitation

Five nurseries, two State and three private, producing 700,000 white pines, were given sanitation work in 1942.

Cultivated Black Currant Elimination

During 1942, 496 bushes on 105 properties were destroyed. This brings the total destroyed to date to 6,891 bushes on 1,511 properties, chiefly in the northeastern portion of the State. This work is approximately 73 percent completed.

Future Control Program

With the discovery in 1942 of widespread ribes infection it is important that efforts be continued in cooperation with owners, not only in initially protecting valuable white pine shelterbelts, but also in main-

taining control already performed. Since both wild and cultivated ribes commonly occur in close association with white pine in shelterbelts, this is particularly important.

Summary of Blister Rust Control, 1942

Michigan

Blister Rust Conditions

During 1942, pine infection was found for the first time in Gogebic, Ionia and Oscoda Counties, as well as in many unprotected pine stands in other counties. Including all of the Upper Peninsula Counties and most of the lake-bordering counties in Lower Michigan, rust on pines has been reported from 42 counties to date. Pine infection is particularly heavy and damaging in Marquette, Dickenson, Houghton and Keweenaw Counties in Upper Michigan. Ribes infection was general throughout the State.

White Pine

White pine, most abundant in the northern two-thirds of the State, is largely second growth not yet of mature age. Increasing war needs are causing a substantial and unfortunate cutting of immature timber. Fire protection, blister rust control, and favorable weather conditions are resulting in a gratifying increase in natural reproduction, extending the acreage of white pine, and adding materially to the number of trees per acre. The present commercial value of white pine is estimated at \$27,000,000, the potential value of young growth is even greater, and the aesthetic value in recreational areas is very high.

Of the 446,454 acres of valuable white pine, 11.8 percent is owned by the Federal Forest Service, 32.6 percent by the State, counties and cities, and 55.6 percent by private owners.

Local Control in 1942

Ribes eradication in 1942 was performed under three programs: State-W. P. A., Regular-Cooperative, and Civilian Public Service (Conscientious Objectors). The State-W. P. A. was by far the largest source of labor. Results are shown as follows:

	: Acres	:	:	:	:
Eradication	: White Pine	: Acres	: Ribes	: Man-days	
	: Protected	: Worked	: Pulled	: Used	
Initial	: 15,248	: 60,793	: 942,018	: 5,260	
Re-eradication	: 23,984	: 66,746	: 1,023,465	: 7,735	
Total	: 39,232	: 127,539	: 1,965,483	: 13,015	

Status of Local Control, December 31, 1942

Ownership Class	: Total Control Problem :		: Net Control Area :			
	: Net Acres :		: Acres :		: Percent :	
	: White : Control :		: Initially : On Main- :		: tially : On Main- :	
	: Pine : Area :		: Worked : tenance :		: Worked : tenance :	
Fed. Forest Service	: 52,563 :	: 143,325 :	: 129,480 :	: 65,566 :	: 90.3 :	: 45.7 :
Non-Federal Public	: 145,445 :	: 340,648 :	: 307,415 :	: 97,037 :	: 90.2 :	: 28.5 :
Private	: 248,446 :	: 860,354 :	: 681,908 :	: 95,037 :	: 79.3 :	: 11.0 :
Total	: 446,454 :	: 1,344,327 :	: 1,118,803 :	: 257,640 :	: 83.2 :	: 79.2 :

Nursery Sanitation

No nursery sanitation was performed in 1942. The eight nurseries producing about 9,000,000 white pines, two owned by U. S. F. S., one by S. C. S., three by State, and two by private owners, are on a maintenance basis requiring only a check for ribes every two years.

Cultivated Black Currant Elimination

Except for some recheck this program has been virtually completed in white pine growing counties. In 1942, 1,605 bushes on 325 properties were destroyed, bringing the total destroyed to date to 143,700 bushes on 14,859 properties.

Future Control Program

Because the rust is thoroughly established and intensifying very rapidly, practically all of the many young pines will be killed in unprotected stands within a few years. To ensure the best possible use of limited manpower available postchecking and other surveys should be made. Only those areas most immediately in need should be worked this coming season.

Summary of Blister Rust Control, 1942

Minnesota

Blister Rust Conditions

White pine blister rust is now found scattered throughout the entire white pine producing areas of the State. The increase in pine infections appears to be most rapid in the northeastern part of the State. During 1942 pine infection was found for the first time in Koochiching County on the Nett Lake Indian Reservation. Infection on Ribes cynosbati was found in Douglas County. This location is about 30 miles west of the natural range of white pine.

White Pine

Minnesota contains the greatest amount of old growth sawtimber-size white pine of the three Lake States. There are approximately 106,000 acres containing 1,598,200 M. board feet of sawtimber remaining. The white pine area in Minnesota contains 285,680 acres, which is made up of 257,382 acres of natural and 28,298 acres of planted pine. This acreage is increasing each year as additional mapping is done, particularly in northeastern Minnesota. The white pine acreage is also increasing through natural reproduction which has been stimulated by abundant rainfall since 1937. A valuation of \$20,330,000 has been placed on Minnesota white pine, based on replacement and stumpage value.

Local Control in 1942

Ribes eradication was performed by Bureau Regular-cooperative and Regular Forest Service funds, State-W. P. A., and Indian Service C. C. C. Agencies. These agencies performed local control work on various ownerships as follows:

Ownership	Acres	Acres	Ribes	Man-days
Class	White Pine Protected	Worked	Destroyed	Used
	Initial Eradication			
U. S. Forest Service:	484	884	204,324	426
Non-Federal Public	278	1,261	135,356	532
Private	82	479	10,185	85
Total Initial	844	2,624	349,865	1,043
	Re-eradication			
U. S. Forest Service:	5,286	6,616	411,037	3,034
U. S. Indian Service:	-	22	33,658	39
Non-Federal Public	1,856	3,790	179,984	1,425
Private	1,413	2,883	324,512	1,600
Total Re-eradication	8,555	13,311	949,191	6,098
Total	9,399	15,935	1,299,056	7,141

Status of Control, December 31, 1942

Ownership Class	Total Control Problem		Net Control Area			
	Net Acres		Acres		Percent	
	White Pine	Control Area	Initially: Worked	On Main- tenance	Initially: Worked	On Main- tenance
U. S. F. S.	116,444	213,293	66,499	14,575	31.1	6.8
U. S. I. S.	19,523	29,886	27,987	2,826	93.6	9.4
U. S. Park Service	88	251	251	0	100.0	0
Non-federal Public	67,993	146,560	87,141	20,790	59.4	14.1
Private	81,632	261,428	192,709	28,200	73.7	10.7
Total	265,680	651,148	467,536	66,391	77.5	10.1

Nursery Sanitation

During 1942 maintenance work was done at the Eveleth Forest Service Federal Nursery and General Andrews State Nursery. A total of 3,521 ribes was removed from 1,493 acres of control area by the expenditure of 26 man-days.

Cultivated Black Current Elimination

No cultivated black current elimination work was done during 1942. Initial work has essentially been completed and only a small amount of recheck work remains to be done. To date, 23,306 cultivated black current bushes have been removed from 3,260 locations.

Future Control Program

Due to the rapid intensification of rust in the northeastern part of Minnesota the greatest effort possible should be made to bring more pine areas under protection. During 1943 the majority of control work should be concentrated in the area of the Superior National Forest. If time and money permits, additional mapping and postmarking should be done particularly on the National forests in order to wisely plan the future control program. Private pine owners should be reached, probably through newspaper articles and radio talks and urged to protect their own pine.

Summary of Blister Rust Control, 1942

Ohio

Blister Rust Conditions

No new locations of blister rust were found in Ohio during 1942. One location of cultivated black currants and one location of wild currants was found infected. The volume of ribes infection is decreasing which is probably due to the almost complete elimination of cultivated black currants from the pine growing areas. Eight locations of pine infection have been found in eight counties to date.

White Pine

There are 33,771 acres of white pine in Ohio of which 30,535 acres are planted. The total control area is 409,732 acres. It will be noted that 90.4 percent of the white pine acreage is planted pine. This species is increasing in favor for most planting purposes primarily because of its excellent growth and survival records. When the future lumber yield is considered the present white pine is valued at \$209.00 per acre. The present value of all white pine in Ohio would therefore be \$7,058,139.

Local Control in 1942

Ribes eradication was performed on State, Municipal and private lands with funds provided from Regular and Cooperative sources including private owner and the Civilian Public Service camps. The work accomplished is shown as follows:

Eradication	Acres	Acres	Ribes	Man-days
	White Pine Protected	Worked	Destroyed	Used
Initial	1,664	7,464	12,892	457
Re-eradication	65	663	41	4
Total	1,729	8,127	12,933	461

Status of Control on December 31, 1942

Ownership Class	Total Control Problem		Net Control Area			
			Acres		Percent	
	White Pine	Control Area	Initially Worked	On Maintenance	Initially Worked	On Maintenance
Fed. Forest Service	199	1,798	1,798	1,090	100.0	60.6
Other Federal	223	2,100	1,347	574	64.1	27.3
Non-federal Public	14,401	85,505	30,543	3,503	35.7	4.0
Private	18,948	320,329	147,459	47,321	46.0	14.7
Total	33,771	409,732	190,147	50,488	44.2	12.4

Nursery Sanitation

No nursery sanitation work was done during 1942. All Federal and State nurseries are practically on a maintenance basis. It is planned to scout these nurseries in 1943 with particular emphasis placed on the removal of cultivated ribes from control zones.

Cultivated Black Current Elimination

During 1942, 200 cultivated black currents were removed from 92 local-

tions. This phase of blister rust control work is essentially completed. There are 283 known locations containing 2,605 cultivated black currants remaining in Ohio. These locations are not near enough to existing pine stands to be considered a menace.

Future Control Program

The majority of white pine in Ohio is planted on non-federal public and privately owned lands. The local control program has not been able to keep up with the planting since only about 44 percent of the white pine has received initial protection. It will be the aim of the blister rust control organization to secure more aid from public and private pine owners in order to give all plantations initial protection as soon as possible. Through educational campaigns and personal contacts interest in the protection of white pine will be stimulated.

Summary of Blister Rust Control, 1942

Wisconsin

Blister Rust Conditions

During 1942 blister rust on white pine was found for the first time in Marquette County in an unprotected pine stand. Blister rust has now been found on white pine in 55 counties and on ribes in all 71 counties.

White Pine

There are approximately 390,849 acres of white pine considered at the present time to be worth protecting against blister rust. In addition there are approximately 400,000 acres of white pine which are not as yet sufficiently stocked to justify control costs. The white pine acreage continues to increase annually by natural and artificial reforestation. Since 1937 abundant rainfall has increased the survival of white pine seedlings. The annual increase in pine acreage exceeds the annual loss from logging, fires, etc.

The value of standing white pine in Wisconsin is estimated at approximately \$36,906,615.

Local Control in 1942

During 1942 local control work was performed on Indian Reservations, other public and private lands by Indian Service C. C. C. funds and Regular-cooperative funds. The work accomplished is shown as follows:

Eradication	Acres	Acres	Ribes	Man-days
	White Pine Protected	Worked	Destroyed	Used
Initial	7,032	24,275	76,542	716
Re-eradication	15,020	42,799	285,071	2,284
Total	22,052	67,074	361,613	3,000

Status of Control on December 31, 1942

Ownership Class	Total Control Problem:		Net Control Area			
	Net Acres		Acres		Percent	
	White Pine	Control Area	Initially Worked	On Main-tenance	Initially Worked	On Main-tenance
U.S. Forest Service:	28,593	71,834	63,815	4,839	88.8	6.7
U.S. Indian Service:	30,143	66,324	48,380	543	72.9	0.8
Non-federal Public:	65,260	180,001	157,866	21,952	87.7	12.1
Private:	266,653	1,168,442	664,149	54,498	56.8	4.6
Total	380,649	1,486,601	934,210	81,832	82.8	1.5

Nursery Sanitation

There are eleven important white pine producing nurseries in Wisconsin all of which have been protected against blister rust. These nurseries produced about 17,550,000 white pines during 1942.

Sanitation work was performed during the summer season at the Trout Lake and the Silver Cliff Transplant nurseries.

Cultivated Black Current Elimination

The European or cultivated black currant is gradually being eliminated from the white pine areas of the State. During 1942 recheck examination work was done in Marinette County. A total of 1,118 inspections were made. Three bushes were removed from two locations.

Since 1934, when the cultivated black currant program was started in Wisconsin, 37,051 bushes have been removed from 6,597 locations.

Future Control Program

The white pine blister rust is intensifying rapidly throughout the northern forest areas. There is need for much control work both initial and re-eradication. Careful planning is necessary to make the best use of the limited man-power during wartime to protect pine areas most in need. An educational program is needed to reach pine owners and encourage them to protect their pine stands.

DETAILED NARRATIVE REPORT, 1942

Foreword

The Organization of the 1942 report differs somewhat from preceding reports, in that it follows the Work Project system put into effect in 1942. There are four main divisions, so arranged that separates will be available covering work on National Forests and Indian Reservations to these respective organizations. The four parts are listed below.

(1) BLR-1-3. Leadership, coordination and technical direction of white pine blister rust control. This includes summaries, omnibus tables, general narrative section, and summary tables of all activities. All local control work is included for completeness.

(2) BLR-3-3. Cooperative blister rust control on State and privately owned lands. This includes tables and a discussion by States of work done and status of control on lands in non-federal public and private ownership.

(3) BLR-4. Blister rust control operations on National Forests. This includes tables and discussions of work done and status of control on each of the ten white pine growing National Forests in this Region. Separates will include maps of each forest showing status of control work.

(4) BLR-7. Blister rust control operations on Indian Reservations. This includes tables and discussions of work done and status of control on each of the ten Indian Reservations producing white pine in this Region. Separates will include maps of each reservation, where obtainable, showing status of control work.

BLR-1-3. Leadership, Coordination and Technical Direction of White Pine Blister Rust Control, North Central Region

Organization

The War had its effect on our permanent organization in 1942, as well as on our part-time supervisors and field workers. Several of our permanent force entered the armed forces and most of our part-time supervisors, foremen and laborers either entered the armed services or accepted positions in defense industries. Those of the permanent staff entering the armed forces or war work during 1942 are as follows:

William F. Bada, CAF-4, Bookkeeper in Milwaukee Office, inducted into the Army, March 26, 1942.

William R. Doell, SP-5, Southern Minnesota District Leader, Second Lieutenant, Air Intelligence Service, August 4, 1942.

Harry G. Luer, SP-3, Wisconsin, Assistant State Leader, enlisted in Navy, Construction Battalion "Sea Bees" as Yeoman Second Class, December 4, 1942.

Aaron B. Glasgow, CAF-7, Business Manager in Milwaukee Office, enlisted in Navy, Construction Battalion "Sea Bees" as Storekeeper, Third Class, December 18, 1942.

Kay M. Wiest, CAF-3, Assistant Statistical Draftsman, Milwaukee, transferred to the War Department, Engineers, Chicago, Illinois on June 28, 1942.

Harold P. Williams, Wisconsin State Foreman (State Funds), Madison, Wisconsin, was inducted into the Army, November 11, 1942.

Vacancies created by the above actions were filled as follows:

Mr. Bond's position as bookkeeper was filled by Mrs. Edna Colbo, CAF-3.

Mr. Doell's position as Southern Minnesota District Leader was not filled except temporarily during the summer. Control records and other necessary work were responsibilities assumed by the State Leader.

Mr. Luer's position was partly filled by a CAF-3 stenographer, Miss Ann M. Gallagher early in 1943. Miss Gallagher took over the clerical duties, and Mr. Loebe the administrative and control work duties formerly carried by Mr. Luer.

Mr. Glasgow's position as Milwaukee Office Manager was filled January 1, 1943 by Mr. Paul A. Augé, CAF-7, transferred to Milwaukee from the Regional Office of Barbary Education at Minneapolis, Minnesota.

Miss Wiest's position was left unfilled. Various members of the Milwaukee Office did their best in making the necessary maps and charts.

That portion of Mr. Williams's duties pertaining to drafting in the Madison Office was taken over by Mr. Peter A. Baurik who is also paid on State Funds.

The majority of our field supervisors and foremen, as well as many of our experienced crew men, went into defense work. With the cessation of State W. P. A. programs in December, 1942, we would have had to lose many of these employees anyway due to lack of funds.

WASHINGTON, D.C.

L. F. Hooten, Chief
L. A. Wright, Asst. Chief

MILWAUKEE - WISCONSIN

Henry H. Hooten - Regional Leader
Lillian E. Nelson - Asst. Regional Leader
Edwin E. Hooten - Socialist Control Studies
Arden H. Glasgow - Office Manager
Clara N. Winter - Secretary - Stenographer
Elaine D. Cella - Bookkeeper Payroll Clerk
Marie L. Hauer - Stenographer
Fred E. Skut - Forest Service B.R.C. Inspector

Milwaukee Wis.

Belvidere Illinois

Indianapolis Ind.

Ames Iowa

Wooster Ohio

MINNESOTA

STATE FORESTER
L. B. Ricker
State Leader
St. Paul, Minn.

Eastern District
D. H. Stewart
Dist. Leader
Duluth
Minnesota

Western District
J. H. Liska
Dist. Leader
Walker
Minnesota

Southern District
W. R. Dwell (ed)
Dist. Leader
North Branch
Minnesota

MICHIGAN

Commissioner of
Game & Fish
John R. Kroeber
State Leader
Lansing, Mich.

Upper Peninsula
John H. Sawyer
Dist. Leader
Escanaba
Michigan

Lower Peninsula
R. J. Thompson
Dist. Leader
Newaygo
Michigan

- (a) State Employees
- (b) Time divided between
Indiana & Ohio
- (c) Military Forestry
August 14, 1942
- (d) Military Forestry
December 12, 1942

WISCONSIN

Commissioner of
Game & Fish
John R. Kroeber
State Leader
Madison, Wis.

Eastern District
Ray Liska
Dist. Leader
Antigo
Wisconsin

Western District
E. H. Cline
Dist. Leader
Manitowish
Wisconsin

Southern District
H. E. Luer (ed)
Dist. Leader
Oshkosh
Wisconsin

Authorization and Sources of Funds

As in the past several years, the work in 1942 was continued under a Memorandum of Agreement drawn up between the responsible State Agencies, and the Bureau of Entomology and Plant Quarantine. These and other memoranda governing blister rust control are shown in the 1936 Regional Annual Report.

During 1942 control work was performed on funds furnished from the following sources:

(1) State and Private

- a. Direct aid (Ribes eradication matched by 3103 Federal funds)
- b. Indirect aid (Other services)

(2) Federal Blister Rust Appropriation

- a. 3101. Leadership, coordination and technical direction
- b. 3103. Cooperative blister rust control on State and private lands. (Matched by State, direct aid)
- c. 3104. Blister rust control on National Forests in Minnesota

(3) Bureau sponsored State-E. F. A. projects in Iowa, Michigan, Minnesota and Wisconsin

(4) E. C. C. through Soil Conservation Service and Indian Service in Wisconsin, Minnesota and Ohio

Spread of the Rust

Weather in 1942 was similar to the previous several years. As a consequence, a greatly increased intensification of the rust was observed in known areas and many new infection centers were discovered. The rust was already so abundant and damaging that no control work was attempted on several areas. The pine values had been actually or potentially destroyed by the rust.

For convenience in discussing the development of pine infections three stages are recognized as follows:

- (1) Introductory Period
- (2) Period of Intensification
- (3) Period of Climax

(1) Introductory Period: This includes the period from initial pine infection to the time when approximately five percent of the pines are infected. It is characterized by relatively slow intensification of pine infection, over

increasing numbers of pines becoming infected at three or four year intervals. Negligible damage, except on very small pines, is apparent. Depending on ribes conditions, and other factors, this period usually lasts from four to ten years.

(2) Period of Intensification: This is the period of greatest increase in the number of pines becoming infected, and in the formation of cankers. The percent of pines infected increases from about 5 percent to the approximate maximum of 90 to 95 percent. Waves of infection usually occur every year, particularly in advanced stages. Death of pines increases most rapidly in the younger age classes and more slowly among the larger trees. This period varies in length from 5 to 15 years, depending on volume of ribes, site, exposure, geographical features and optimum weather conditions favorable for development of rust.

(3) Period of Climax: This period may be described as one of saturation. The rust has reached its greatest concentration under existing conditions. The number of new cankers found each year is smaller due to decreasing amounts of living pine foliage, and defoliation of ribes leaves by the rust before sporidial production is completed. Elimination by death of all white pine trees is complete to the degree that the forest is no longer a white pine stand. Not only are existing white pines killed by blister rust, but also white pine reproduction as it appears. The length of this period is indefinite. It continues so long as living pine foliage is present and the causative ribes factor remains.

Studies of pine infections in this region by Dr. Honey and others have shown that on areas where ribes and white pines are closely associated the rust builds up so rapidly that in 5 to 15 years after the rust hits there is nearly complete pine infection and shortly thereafter elimination of white pine as a tree of importance in the stand.

The general status of rust spread at the end of 1942 in each of the states was as follows:

Illinois

To date no pine infection has been found in Illinois. No new counties were added in 1942 to the ten counties in the northern part of the State where rust had been found previously, chiefly on R. nigrum. Only a limited amount of scouting for the rust was performed in 1942. Doubtless an intensive search would disclose pine infections in northern counties.

Indiana

The known blister rust situation remained unchanged in Indiana, chiefly due to the lack of scouting. There are four counties in northern Indiana where rust, principally on R. nigrum has been observed. No natural pine infection has been found in the State.

Iowa

A limited disease survey carried out in connection with other field work in the fall of 1942 disclosed the location of 46 new ribes infections

scattered in the northern half of the State, and added eleven new counties to the infected list, bringing to 55 the total of Iowa counties in which infected ribes have been found. Rust was observed on seven different species of ribes, including cultivated gooseberries, red currants, and Ribes americanum. Heavy production of telia was noted on all of the three last named ribes. Since R. americanum holds its leaves later in the fall than most other ribes species, this discovery is disquieting.

No pine infection was located in 1942, so the total of three counties where infected pines have been found, namely, Dubuque, Lyon and Story, remains the same. Although no pine infection was found in 1942, the results of scouting indicate the rust is so widespread that given favorable weather conditions we may expect wholesale pine infection in unprotected white pine shelterbelts. This is particularly true in Iowa, where cultivated ribes are usually close to shelterbelts, and wild ribes commonly occur within the shelterbelts.

Michigan

Pine infection was found for the first time in 1942 in three counties, namely, Gogebic, Ionia and Oscoda. Pine infection has now been reported from all of the 15 counties in Upper Michigan and in 27 in Lower Michigan, chiefly those counties bordering Lake Michigan and Lake Huron. Cankers of 1937 to 1939 origin were found in large numbers in new unprotected areas in counties previously known to include pine infections. Pine infection is most abundant in the Upper Peninsula and the northwestern portion of the Lower Peninsula. Many unprotected areas exist where ribes eradication is not feasible because of the high percent of white pines infected or killed by blister rust.

Rust on ribes was unusually heavy in 1942. While ribes infection was not found in any new counties it was present in the great majority of areas worked. Rust on ribes has been found in 79 of the 83 counties in the State. As yet no ribes infection has been observed in the four southern counties of Calhoun, Hillsdale, Lenawee and Monroe.

Minnesota

Pine infection was found in 1942 for the first time in Koochiching County on the Nett Lake Indian Reservation. About ten percent of the pines in an unprotected plantation was infected, with cankers originating in 1936 and most abundant on 1937 and 1938 growth.

Ribes infection was found for the first time in Douglas County on R. cynosbati.

Rust has now been reported on ribes from 56 counties, and on pines from 32 counties. The continuously wet years since 1936 have favored a very great intensification of the rust, particularly in northeastern Minnesota. This period has also witnessed the increase of white pine areas by natural reproduction, not only because of favorable weather conditions and abundance of white pine seed, but also because of the absence of serious forest fires. Unfortunately, in unprotected areas the rust is exacting its toll of young pines faster than they can become established.

Ohio

30 new counties in 1942 were added to those having either ribes or pine infection. To date, rust on ribes has been reported from 40 counties in the northeastern quarter of the State and on pine from ten counties in the northern half. In the southern third of the State there are large areas on which wild ribes are absent or scarce. Fortunately, white pine grows rapidly and is well adapted to the southern portion.

Wisconsin

Pine infection was found for the first time in 1942 in Marquette County where two infected trees were discovered with cankers originating apparently in 1936. This brings to 55 the number of counties having known pine infection. Rust on ribes has previously been found in all of the 71 counties in the State.

As in the other Lake States, a large amount of rust intensification on pines was discovered in unprotected areas in northern Wisconsin. The rust is widespread, well established, and has reached the damage stage at many points where ribes eradication has not been performed.

Tells were particularly abundant on ribes in north and central Wisconsin. During September almost constant rain handicapped eradication crews and made conditions so favorable for sporidial production that we may expect an abnormally high wave of pine infection originating in 1942.

White Pine

General

The continuation of wet years started in 1937 has resulted in a material extension in pine acreages and in increasing the number of white pines per acre. Factors principally responsible include an abundance of seeds, favorable growing conditions, good forestry practices including blister rust control, and the absence of serious forest fires. A total of 1,172,327 acres of white pine was listed as the control problem at the end of 1942. This was 49,779 acres greater than the 1,122,548 acres of pine shown as of December 31, 1941. This net increase represents a larger acreage of young white pine reported chiefly on the Superior National Forest, reduced by acreages thrown out by resurveys in other parts of the region. Reasons for discarding certain acreages of pine formerly carried include insufficient pine values, destruction of stands by fire, errors in original surveys and estimates, etc.

Value of White Pine

It is difficult to place a very useful monetary value on the white pine in this region. The cost of the living tree itself - for lumber, protection against wind, sun and erosion, shelter for game, aesthetic qualities, are so numerous and frequently so intangible as to preclude the fixing of values in dollars and cents. Furthermore, even if this were possible, the changing value of the dollar would soon make such an

appraisal lose its significance.

For whatever it may be worth, the following table gives figures furnished by blister rust state leaders, foresters, pine owners and others as to the value in dollars and cents of white pine acreages by states:

State	Valuation	Basis
Illinois	\$1,600,000	Estimate
Indiana	1,516,041	Calculation on average value per acre
Iowa	9,500,000	Calculation on owner's average value per acre
Michigan	27,000,000	Estimate
Minnesota	20,330,000	Replacement and stumpage value
Ohio	7,058,159	Calculation on owner's average value per acre
Wisconsin	36,906,615	Partly on formula for expectation value
Region	\$103,709,795	

The real value of white pine, and indeed, of any natural resource, lies in the extent to which it contributes toward the security, livelihood, happiness and general well-being of humanity. In this sense, white pine has present high value and enormously greater potential value if present young stands are permitted to reach maturity. In this fulfillment, blister rust control has a vital responsibility. These values cannot be expressed in dollars. Perhaps examples will serve better.

Michigan, Wisconsin and Minnesota alone during the period 1864 to 1954 produced approximately 217,000,000 M board feet of white pine saw-timber, based on "Lumber Production" completed by the Forest Service in 1956. This represents 70.3 percent of the total cut of all white pine including sugar pine and western white pine in the United States during that period. This gave employment to hundreds of thousands of woods and sawmill workers and to several times that number in the many woodworking industries. There is no doubt that the ultimate use of finished products made of white pine--houses, ships, doors, pattern stock, etc., contributed substantially to the development of our country.

There now remain only insignificant remnants of these vast virgin forests in the Lake States. Millions of acres once producing virgin white pine are now lacking in white pine reproduction, due to clear cutting and repeated fires. There does exist, however, substantial acreages of young mature stands and a much larger acreage of pole sized and younger trees.

A surprising amount of employment is now furnished by the relatively small volume of standing white pine timber. According to "1929 Census Reports" in Minnesota alone the logging, milling and planing of white pine

in 1939 furnished employment to 757 people, paid them \$857,155, and produced a product valued at \$1,702,649. With young white pines preserved to maturity, harvested on an intelligent sustained yield basis, there is no reason why many communities and thousands of families cannot live and prosper in sections now not even self-sustaining.

The uses of white pine lumber are many and important, particularly during wartime. White pine is used for pattern stock, containers for high explosives, doors, window sashes, special parts of ships, matches, cheese boxes, and many other products.

These various uses of white pine support many industries and give employment to hundreds of thousands of workers. In the "Report of the Industrial Commission of Wisconsin, 1940" it is shown that in Wisconsin alone there were, in 1940, 1,169 industries depending upon white pine in whole or in part. These industries supported 59,003 employees receiving \$79,610,609 in wages. Since this situation is fairly similar in the other states it is possible that industries predominately using white pine in the region may employ 250,000 workers and pay \$300,000,000 in wages annually.

Since we, as blister rust control workers, are primarily interested in protecting young and future stands of white pine we have an important part in ensuring the future and continued production of white pine timber to sustain and expand these white pine-using industries.

There are other important values to white pine besides commercial and as a source of livelihood. Based on a census in Ohio, 1940, white pine owners placed the following average per acre values on an average ten-year old white pine plantation:

Value of land without white pine \$95.00

Value of White Pine

Fuel wood	\$6.00	
Improved appearance of farm ...	49.00	
Control of soil erosion	37.00	
Wind protection	1.00	
Game cover	12.00	
Aesthetic value	12.00	
Future lumber supply	<u>52.00</u>	
Total value of white pine		\$209.00

Subtracting the \$52.00 for future lumber gives a present value of \$157.00 per acre. All of these values, with the exception of \$6.00 as fuel, concern the living tree and its beneficial effect on other things. Production of fuel may be considered as a by-product in the form of thinnings and prunings. These values of the living trees are not simply one-time values as stumpage, but continuing practically throughout the life of the tree.

Another example of living values of white pine trees is obtained from Iowa. In 1938 the Iowa state leader conducted a survey to find out how owners of white pine shelterbelts valued them. In practically all

passed the shelterbelts were 40 years or older, and had reached their full usefulness. On the basis of 81 returns, the average value per shelterbelt given by owners was \$794.92. The proportionate values for different uses are shown following:

Improved appearance of Farmstead.....	23.0%
Protection for Poultry and Stock.....	27.3%
Protection for House	27.0%
Protection for Garden and Orchard ...	16.9%
Fuel	1.9%
Lumber	3.9%
Total	100.0%

The living value of white pine trees in shelterbelts is emphasized in the foregoing tabulation. In spite of the fact that the shelterbelts were nearly mature, the real stumpage value was only four percent of the total. The everyday living value of the trees represented 96 percent of the total. In this respect the owners of shelterbelts in Iowa and of reforestation plantings in Ohio were in fairly close agreement.

Planted and Natural White Pine

White pine has been and on a reduced scale because of labor shortage continues to be extensively planted throughout the Region. There are 132,003 acres of planted pine in the control area, representing 16.4 percent of the total. The actual planted acreage is larger than this, since small plantings are not included in the above figure. The division into natural and planted white pine is tabulated below by states:

Division of White Pine into Natural and Planted by States

State	White Pine Acreage			Percent Planted
	Natural	Planted	Total	
Illinois	233	3,231	3,464	23.4
Indiana	391	6,858	7,249	9.6
Iowa	593	4,407	5,000	39.3
Michigan	365,102	61,352	426,454	14.2
Minnesota	257,382	25,298	282,680	9.9
Ohio	3,256	30,535	33,791	90.4
Wisconsin	353,447	37,202	390,649	9.5
Total	620,374	102,005	722,379	14.1

It is highly significant that the four lower States having the least amount of natural pine planted practically 91 percent of their total white pine. This fact demonstrates a high regard for the tree. If it does not occur naturally it is established artificially. This fact is shown another way. The four lower States contain only 0.4 percent of the natural pine as compared with 23.5 percent of the planted pine in the Region.

It is of interest to note the extent to which white pine has been planted by the various ownership classes shown following:

Ownership Class	Percent of Total Planted Pine
Forest Service	29.5
Indian Service	0.6
Non-Federal Public	46.4
Private	23.5
	100.0

In view of the large amount of planting on public lands through Emergency Relief programs during recent years, the fact that 23.5 percent of all white pine planting was done by private individuals speaks strongly of the value of the tree in the minds of the general public. Since the above figures do not include a large number of small plantings, the participation of private owners shown above errs on the conservative side.

In recent years, with the help of the W.P.A. program, a comprehensive survey of forest plantations in Ohio was conducted by the State Forestry Department. An analysis of data collected showed conclusively that white pine was one of the best trees for reforestation in Ohio because of its adaptability, excellent growth, freedom from disease, and general usefulness. As a consequence of this survey the Ohio Forestry Department, in producing trees for reforestation by the State and general public, is producing one-third white pine, one-third red pine and one-third all other species.

Ownership of White Pine:

Our most recent figures on ownership classes are shown following. Inasmuch as the ownership status is constantly changing, these figures can be considered only approximate.

U. S. Forest Service	137,275 acres or 16.8%
U. S. Indian Service	43,676 acres or 4.2%
Other Public (chiefly State)	253,996 acres or 25.5%
Private	626,380 acres or 53.8%
Totals	1,172,327 acres or 100.0%

Compared with similar figures in 1941 there has been an increase in Forest Service acreage by approximately 24,000 acres due to additional acres included on the Superior National Forest; an increase of 50,000 acres in private ownership, chiefly in Ohio; and a decrease of nearly 4,000 acres under State ownership, chiefly in Michigan, thrown out by resurvey and postcheck.

Survey Work and Checking:

Survey work, for purposes of simplification, is considered under one heading in this report. It can be classified into four types as follows:

(1) Pre-eradication survey: This includes all pine mapping and survey work done initially in preparation for initial eradication.

(2) Resurvey: As the name implies, this constitutes an additional survey of an area prior to initial eradication. Often the initial survey was made several years prior to eradication and it is necessary to know the present status as to pine conditions and acreages, the abundance and occurrence of ribes, etc.

(3) Checking: This is the systematic evaluation of ribes eradication the same year the work was done in order to determine if acceptable protection had been afforded or whether certain portions require reworking.

(4) Postchecks: This survey is similar in operation to resurvey, except it is performed on areas worked several years previously. On the basis of the postcheck, pine areas are listed as needing re-eradication, thrown out because of insufficient pine values, or placed on maintenance.

Pre-eradication Survey

During 1942, 73,669 acres of pine were covered by pre-eradication survey, of which 59,139 acres involving 157,272 acres of control area were considered worth protecting. Much of this work was done under State N.F.A. programs in Iowa, Michigan, Minnesota and Wisconsin, particularly in northwestern Minnesota. State and district leaders on regular funds also performed a considerable amount of this work.

Resurvey

A total of 126 areas involving 62,773 acres of control area were resurveyed. Including 18,532 acres in Ohio, discarded from permanent records in the office and included in Table 1a, there were 13,850 acres resurveyed. Approximately 50 percent, or 17,059 acres were thrown out as not having sufficient pine values to justify cost, or because ribes were too abundant. The remaining acreage examined, 26,761 acres were retained in the control problem. The largest amount of resurvey performed was in Michigan, under the State N.F.A. program.

Checking

Good ribes eradication work was done in 1942 as shown by reports of checking work done. On the basis of 3,800 strip acres the average ribes remaining on 178,674 acres worked amounted to 1.5 bushes with 2.9 F.C.S. per acre. All but 349 acres, or 99.7 percent of the total showed less than 25 F.L.S. per acre after eradication, and the great majority of the acreage worked, 95.0 percent, showed less than 15 F.L.S. per acre.

Postchecking

Most of this type of work was done in Michigan and Wisconsin. Of the total 129,773 acres of control area examined, 26,059 acres were discarded; 100,911 acres required rework; and 3,113 acres were placed on maintenance.

Local Control Accomplishments

During 1942, ribes eradication work provided protection for 74,162 acres of white pine by removing 3,853,111 ribes from 234,831 acres of control area by the expenditure of 25,693 man-days. A summary of this work will be found in Tables 2, 2a, 2b, 2c, 2d and 2e where the figures are broken down by eradication, states, agencies and ownerships. Table 3 provides a breakdown by ownerships and agencies.

Control of white pine blister rust is accomplished by removal of the alternate host, ribes, from within the pine stand and the immediately surrounding area. Due to factors that influence the distance of spread of rust it is possible to vary the width of this protective zone and thereby reduce the cost of protection. In practice, protective zone widths vary according to the density of brush and timber which acts as a screen between the ribes and pine hosts. In dense swamps the protective zone may be reduced to 50 feet because of screening. Also, due to the air on swamp floors usually being cool, there is an absence of rising air currents to lift and scatter pine infecting spores which are produced on the ribes leaves. In dense timber the zone width is 300 feet, in open timber 600 feet and in open fields or meadows the full 900 feet. Studies and observations have found these zone widths adequate for the protection of white pine. Some infection will be found, but not of sufficient volume to preclude the production of a fully-stocked stand.

Due to the lack of labor careful consideration was given to the control problem as a whole before areas were finally selected for protection. Young fully-stocked stands of pine in which rust had become established were given priority in the work schedule in order to minimize damage. Accessibility was an important factor in reducing the amount of travel involved. The availability of labor without interference with food production or other war production also decided where control work was to be done.

Ribes eradication was performed with labor provided by Regular-cooperative §103 funds on State and private lands, Forest Service Regular §103 funds on the Superior National Forest, Bureau sponsored State W.P.A. project funds on all ownerships, C.C.C. funds, County funds and some Civilian Public Service funds. Most of the local control work was done with labor provided by the State W.P.A. projects. This source of labor was used on all ownerships except Indian Service. Work with State W.P.A. labor was confined to Minnesota, Iowa, Michigan and Wisconsin. Regular-cooperative §103 funds provided the second largest amount of local control accomplishments.

For a discussion of local control work, by ownership classes, refer to the separate reports found later on in this report.

Status of Control

On December 31, 1942 there were 4,112,284 acres in the total control area. Of this total, 2,732,398 acres had been worked once, leaving 1,379,886 acres to be initially worked. At the present time there are 903,225 acres of control area on maintenance which means that these acres are practically ribes-free. They will need no additional crew work until some major

ecological change takes place to cause the reestablishment of ribes.

In Tables 6 and 7 will be found figures showing the status of control by states and ownership classes. Additional information regarding status of control by land ownerships will be found in the separate reports.

Nursery Sanitation

Fifteen nurseries were given sanitation workings during 1942. According to ownership, eight were private, six State and one U. S. Forest Service. There were 26,124 ribes removed from 3,600 acres of control area at a cost of 135 man-days. This work provided protection for approximately 6,206,300 young white pines. Because nursery stock is grown under overhead watering systems which create more or less optimum infection conditions, a thorough ribes eradication job is required. In order to produce rust-free stock under these conditions periodic workings at least every two years are necessary. Table 3 shows a summary of nursery sanitation work performed during 1942.

Cultivated Black Current Elimination

Since cultivated black currants have been responsible for the establishment of most of the infection centers in this region their removal has been carried on as a separate activity. The cultivated black current is capable of producing an abundance of viable sporidia. It was, therefore, early recognized that the complete elimination of this species of ribes from the pine-growing portions of the region would be an essential step toward providing local control of the rust. State laws have been passed in most pine-growing states which prohibit the growing of cultivated black currants within blister rust control areas.

The program of eliminating the cultivated black currants is now essentially completed in the three Lakes States, Iowa and Ohio. In Illinois and Indiana the cultivated black currants are removed only in connection with the individual control job.

Recheck of locations from which cultivated black currants were removed is done to prevent replanting of bushes by the owners. This phase of the control work is generally done during the dormant season.

Tables 10, 10a and 11 show a summary of work done by states and agencies during 1942 and cumulatively since the beginning of the program.

Sanbor Pruning

Sanbor pruning is done only to save individual trees or groups of trees having a high aesthetic value, such as those found in parks, cemeteries, roadsides, etc. By removing diseased portions of white pine trees after the ribes have been destroyed these trees can be grown to maturity. It is absolutely essential, however, to remove the ribes in

order to prevent reinfection of the pines. Table 15 shows a summary of sucker pruning accomplished in Michigan and Minnesota during 1942 and cumulatively since the beginning of the program.

Informational Activities

In order to stress the importance of protection of white pine against destruction by the blister rust it is necessary that informational material be constantly placed before the pine owners or those responsible for the administration of white pine timber. This is accomplished by means of personal contact, distribution of literature, lectures, newspaper articles, radio talks, motion pictures and exhibits. During 1942, all of these media were used by State and District leaders on numerous occasions.

Volume of Employment

The number of people employed during 1942 decreased considerably over that of the previous year because of the war activities. Many former employees, permanent and seasonal, joined the armed forces or accepted employment in defense industries. The average number of people employed per month dropped from 455 in 1941 to 222 in 1942. Employment during the peak month of June 1942 was only about half of the number employed during the same month of 1941. Table 15 shows a break-down of the number of employees by States and agencies for the calendar year 1942.

Costs

Several agencies contributed funds toward the control of blister rust during 1942. A large part of the control work was accomplished with emergency project funds including State W.F.A. projects and Indian Service C.C.C. camps. Although the C.C.C. program was discontinued on June 30, much work was accomplished on the Menominee and a lesser amount on the Red Lake Reservation.

The State W.F.A. projects provided the greatest amount of assistance. A total of \$113,884.03 was spent mainly for local control and pre-eradication surveys. W.F.A. projects were operated in Michigan, Minnesota, Iowa and Wisconsin.

A considerable portion of the local control work was accomplished with the use of Regular-cooperative funds. Allotments were made to the Bureau of Entomology and the Forest Service. The Bureau allotment, 3103, was divided among seven states on the basis of state contributions toward ribes eradication. This money was spent for control work on non-federal public and private lands. The Forest Service allotment, 3104, was spent entirely on the Superior National Forest in Minnesota.

Tables 12 and 12a show a break-down of expenditures for the calendar year 1942 by States and activities and by agencies and activities. Table 12b, or Omnibus Table 5, shows a summary of expenditures for 1942 broken down by states and sources of funds. Table 12c, or Omnibus Table 6a, shows a break-down of cumulative costs from 1942 to 1942 inclusive.

COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATE LANDS IN THE
NORTH CENTRAL REGION, 1942. WORK PROJECT RLE-3

Objective of Cooperative Project

The purpose of this cooperative project is to control white pine blister rust on all non-Federal lands, both public and private. Non-Federal public and private funds are matched by Regular Federal funds in-so-far as appropriations are available. These funds are administered cooperatively by the Bureau of Entomology and Plant Quarantine and State agencies concerned and spent entirely for local control on State and private lands in the seven North Central States.

Cooperative Expenditures in 1942

During 1942, funds were allotted by various non-Federal cooperators. These cooperators, consisting of several agencies, counties, municipalities and private individuals, contributed \$25,958.65 to the project in the North Central Region. The Bureau of Entomology and Plant Quarantine, under authority of the Lee Act, contributed \$23,072.42 to the project which did not match the entire non-Federal contribution. However, emergency work agencies were then made up this difference by an expenditure of \$58,739.40 for control operations on non-Federal public and private lands.

Control Accomplishments, 1942

Initial ribes eradication work performed with Regular-cooperative funds resulted in the protection of 16,867 acres of white pine of which 6,665 acres were planted pine. This initial protection work required the removal of 469,284 ribes from 71,296 acres of control area with an expenditure of 5,323 man-days.

Re-eradication gave additional protection to 23,063 acres of white pine of which 3,534 acres were planted pine. A total of 363,801 ribes was removed from 64,017 acres of control area with a cost of 3,167 man-days. Further information on local control work with Regular-cooperative funds will be found in Table 1.

In addition to regular-cooperative funds State S.P.A. funds were provided for local control work on State and private lands. A summary of all local control work done on State and private lands is found in Table 3. It will be noted that initial protection was given to 23,582 acres of white pine by removing 1,203,470 ribes from 101,643 acres of control area at a cost of 7,787 man-days. Re-eradication gave additional protection to 12,263 acres of pine by removing 1,729,516 ribes from 120,304 acres of control area at a cost of 12,403 man-days.

Table 2 shows a summary of local control work done with Regular-cooperative funds only from the inception of this program, July 1, 1941, to the present time. An appropriation was made, under authority of the Lee Act, for work needed on State and private lands and became available beginning July 1, 1941. Table 2 shows 43,174 acres of white pine protected by

initial and re-eradication work. A total of 972,408 ribs was removed from 156,892 acres of control area with an expenditure of 7,140 man-days.

Status of Control

In Table 1, is shown the status of control on non-Federal public and private lands by ownership and States. On December 31, 1942, the total control problem consisted of 324,437 acres of white pine. This pine acreage plus protection zones amounted to 3,582,868 acres making up the total control area. Of this control area, 2,392,344 acres, or 66.7 percent, have been initially worked. A total of 413,212 acres of control area, or 11.5 percent, has been placed on maintenance and will require only periodic inspections to determine if sanitary conditions continue to exist. It is the aim of the blister rust control organization to place all white pine areas on a maintenance basis and thereby insure continuous production of white pine lumber.

Table 1. Summary of Local Control on State and Private Lands,
DEC-31, 1942

State	Ownership	Acres W.P. Protected			Acres Worked	Ribs Pulled	Man-days Used
		Natural	Planted	Total			
		Initial					
Illinois	Non-fed. Pub.	-	11	11	379	1,851	17
	Private	-	92	92	1,663	52,256	89
Total		-	103	103	2,042	54,107	106
Indiana	Non-fed. Pub.	-	9	9	731	2,232	20
	Private	-	361	361	5,653	14,005	125
Total		-	370	370	6,384	16,237	145
Iowa	Private	-	28	28	140	14,500	234
Michigan	Non-fed. Pub.	1,012	447	1,459	5,026	79,674	357
	Private	4,799	1,217	6,016	25,208	197,168	901
Total		5,811	1,664	7,475	30,234	276,842	1,258
Minnesota	Non-fed. Pub.	172	-	172	251	16,295	305
	Private	-	2	2	33	2,000	4
Total		172	2	174	284	18,295	309
Ohio	Non-fed. Pub.	-	575	575	1,655	12,193	400
	Private	122	958	1,080	5,725	561	45
Total		122	1,533	1,655	7,380	12,754	445
Wisconsin	Non-fed. Pub.	2,571	2,554	5,125	13,860	35,029	368
	Private	1,528	379	1,907	10,415	43,523	348
Total		4,099	2,933	7,032	24,275	78,552	716
Region	Non-fed. Pub.	3,755	3,596	7,351	21,885	115,202	1,457
	Private	6,449	3,067	9,516	49,405	324,012	1,898
Total District		10,204	6,663	16,867	71,290	439,214	3,355

Table 1. (Contd.) Summary of Local Control on State
and Private Land, BLR-3, 1942

State	Ownership	Acres W.P. Protected			Acres Worked	Ribes Pulled	Man- days Used
		Natural	Planted	Total			
Re-eradication							
Illinois	Non-fed. Pub.	-	498	498	1,798	48,408	231
	Private	-	146	146	565	7,158	77
	Total	-	644	644	2,363	55,566	308
Indiana	Non-fed. Pub.	-	33	33	1,075	11,787	221
Iowa	Private	-	20	20	76	1,066	43
Michigan	Non-fed. Pub.	3,980	114	4,094	6,214	33,352	296
	Private	2,216	450	2,666	9,219	49,127	592
	Total	6,196	564	6,760	15,433	82,479	888
Minnesota	Non-fed. Pub.	105	71	176	1,741	2,319	217
Ohio	Non-fed. Pub.	-	18	18	49	0	0
	Private	-	47	47	514	41	4
	Total	-	65	65	563	41	4
Wisconsin	Non-fed. Pub.	6,958	1,272	8,230	11,891	123,391	829
	Private	5,670	384	6,054	26,917	34,560	492
	Total	12,628	1,656	14,284	38,808	157,951	1,321
Region	Non-fed. Pub.	11,003	2,308	13,311	26,436	270,047	2,116
	Private	7,886	1,086	8,972	37,581	93,754	1,051
Total non-removable		18,889	3,394	22,283	64,017	363,801	3,167
Grand Total		20,085	34,877	54,962	118,407	517,000	4,299

Table 2. Cumulative Summary of Local Control on State and Private Lands,
Regular-cooperative Funds 1911-1942.

State	Ownership	Acres W. P. Protected			Acres Worked	Riben Pulled	Man- days Used
		Natural	Planted	Total			
		Initial Eradication					
Illinois	Non-fed. Pub.	-	11	11	379	1,851	17
	Private	-	103	103	2,017	57,225	105
	Total	-	114	114	2,396	59,076	122
Indiana	Non-fed. Pub.	-	9	9	75	2,202	20
	Private	-	361	361	5,653	14,005	125
	Total	-	370	370	5,728	16,207	145
Iowa	Private	-	30	30	707	11,332	34
	Total	-	30	30	707	11,332	34
Michigan	Non-fed. Pub.	1,191	998	2,189	8,851	81,112	1,03
	Private	5,382	1,250	6,632	27,856	200,048	990
	Total	6,573	2,248	8,821	36,707	281,160	1,023
Minnesota	Non-fed. Pub.	172	-	172	251	16,293	305
	Private	-	2	2	33	2,000	4
	Total	172	2	174	284	18,293	309
Ohio	Non-fed. Pub.	-	813	813	2,700	11,111	108
	Private	127	1,332	1,459	11,020	633	51
	Total	127	1,332	1,459	13,720	11,744	159
Wisconsin	Non-fed. Pub.	2,571	2,634	5,205	14,116	39,061	515
	Private	1,607	730	2,337	15,949	164,783	666
	Total	4,178	3,364	7,542	30,065	203,844	1,181
Region	Non-fed. Pub.	3,924	4,465	8,399	27,064	154,633	1,668
	Private	7,116	3,835	10,952	63,236	453,213	2,285
	Total	11,040	8,300	19,340	90,300	607,846	3,953

Table 2. (Contd.) Cumulative Summary of Local Control on State and Private Lands, Regular-cooperative Funds 1941-1942

State	Ownership	Areas W.P. Protected			Areas Worked	Ribes Pulled	Man-days Used
		Natural	Planted	Total			
		Re-eradication					
Illinois	Non-fed. Pub.	-	498	498	1,798	48,408	231
	Private	-	116	116	565	7,158	77
	Total	-	614	614	2,363	55,566	308
Indiana	Non-fed. Pub.	-	361	361	4,470	11,387	112
	Private	-	29	29	200	2,508	30
Michigan	Non-fed. Pub.	4,240	114	4,354	6,884	34,220	301
	Private	2,446	480	2,926	9,849	49,131	399
	Total	6,686	594	7,280	16,733	83,351	700
Minnesota	Non-fed. Pub.	405	723	1,128	1,851	20,140	417
	Private	-	18	18	49	0	0
Ohio	Non-fed. Pub.	-	18	18	49	0	0
	Private	-	47	47	614	41	4
	Total	-	65	65	663	41	4
Wisconsin	Non-fed. Pub.	6,958	1,385	8,343	15,238	123,428	850
	Private	5,775	416	6,191	27,878	34,592	498
	Total	12,733	1,801	14,534	43,116	158,020	1,348
Region	Non-fed. Pub.	11,863	2,621	14,484	27,420	270,972	2,123
	Private	8,221	1,118	9,339	39,172	93,790	1,064
Total Unincorporated		10,084	3,739	13,823	56,592	264,708	2,187
Grand Total		22,817	5,540	28,357	103,708	522,728	4,310

Table 3. Summary of Local Control on State and Private Lands,
All Agencies, 1942

State	Ownership	Acres W. P. Protected			Acres Worked	Ribes Pulled	Man- days Used
		Natural	Planted	Total			
Illinois			Initial				
	Non-fed. Pub.	-	11	11	379	1,851	17
	Private	-	92	92	1,663	52,256	89
	Total	-	103	103	2,042	54,107	106
Indiana	Non-fed. Pub.	-	9	9	734	2,202	20
	Private	-	361	361	5,653	14,005	125
	Total	-	370	370	6,387	16,207	145
Iowa	Private	-	800	800	2,205	54,060	1,212
Michigan	Non-fed. Pub.	1,692	705	2,397	7,517	120,287	604
	Private	10,149	1,647	11,796	49,915	711,626	4,000
	Total	11,841	2,352	14,193	57,432	831,913	4,604
Minnesota	Non-fed. Pub.	172	106	278	1,261	135,356	532
	Private	17	65	82	479	10,185	85
	Total	189	171	360	1,740	145,541	617
Ohio	Non-fed. Pub.	-	575	575	1,635	12,193	400
	Private	122	967	1,089	5,829	699	57
	Total	122	1,542	1,664	7,464	12,892	457
Wisconsin	Non-fed. Pub.	2,571	2,554	5,125	13,860	33,029	366
	Private	1,528	379	1,907	10,415	45,513	348
	Total	4,099	2,933	7,032	24,275	78,542	714
Region	Non-fed. Pub.	4,435	3,960	8,395	25,386	304,918	1,941
	Private	11,816	3,711	15,527	76,459	896,552	5,846
Grand Total		16,311	7,671	23,982	101,845	1,201,470	7,787

Table 3. (Contd.) Summary of Local Control on State and Private Lands,
All Areas, 1942

State	Ownership	Acres W. P. Protected			Acres Worked	Bibs Pulled	Man- days Used
		Natural	Planted	Total			
			Regeneration				
Illinois	Non-fed. Pub.	-	498	498	1,798	48,408	231
	Private	-	146	146	565	7,158	77
	Total	-	644	644	2,363	55,566	308
Indiana	Non-fed. Pub.	-	22	22	1,081	11,761	144
Iowa	Private	-	70	70	240	11,445	114
Michigan	Non-fed. Pub.	7,005	1,051	8,056	16,108	133,653	1,142
	Private	11,827	705	12,532	19,777	84,652	6,221
	Total	18,832	1,756	20,588	35,885	218,305	7,363
Minnesota	Non-fed. Pub.	1,430	426	1,856	3,790	179,984	1,425
	Private	1,413	-	1,413	2,883	321,512	1,600
	Total	2,843	426	3,269	6,673	501,496	3,025
Ohio	Non-fed. Pub.	-	16	16	49	0	0
	Private	-	47	47	614	41	4
	Total	-	63	63	663	41	4
Wisconsin	Non-fed. Pub.	6,958	1,272	8,230	11,094	183,391	829
	Private	5,670	384	6,054	26,917	34,560	492
	Total	12,628	1,656	14,284	38,011	217,951	1,321
Region	Non-fed. Pub.	15,391	3,628	19,019	38,709	497,383	5,778
	Private	21,910	1,352	23,262	81,595	1,226,135	8,625
Total Regeneration		37,301	4,980	42,281	120,304	1,723,539	14,403
Grand Total		51,732	10,451	62,183	228,119	3,900,485	29,136

Table 4. Status of Control on Non-federal Public and Private Lands
December 31, 1912

State	Ownership	Not Control Problem		Not Initially Worked	
		Acres	Acres	Acres	Acres
		White Pine	Control Area	White Pine	Control Area
Illinois	Non-fed. Pub.	2,753	10,760	2,669	9,660
	Private	771	19,953	521	7,074
	Total	3,524	30,713	3,190	16,734
Indiana	Non-fed. Pub.	2,008	17,749	1,883	16,478
	Private	5,004	111,596	3,917	55,928
	Total	7,012	129,345	5,800	72,406
Iowa	Non-fed. Pub.	285	2,215	226	1,535
	Private	4,705	57,549	2,506	32,730
	Total	4,990	59,764	2,732	34,265
Michigan	Non-fed. Pub.	145,145	340,448	132,391	307,415
	Private	248,446	860,345	197,110	681,938
	Total	393,591	1,200,793	329,501	989,353
Minnesota	Non-fed. Pub.	67,905	146,309	51,795	86,690
	Private	81,632	261,428	60,350	192,709
	Total	149,537	407,737	112,145	279,399
Ohio	Non-fed. Pub.	14,401	65,505	3,213	30,543
	Private	18,948	320,329	10,193	147,459
	Total	33,349	385,834	13,406	178,002
Wisconsin	Non-fed. Pub.	65,250	180,001	59,236	157,566
	Private	266,653	1,168,442	152,731	664,145
	Total	331,903	1,348,443	211,967	821,711
Region	Non-fed. Pub.	1295,057	763,217	211,446	600,387
	Private	626,380	2,799,651	437,336	1,781,957
	Total	1,921,437	3,562,868	648,782	2,382,344

a - Does not include 88 acres of white pine and 251 acres of Control Area which belong to National Parks. These figures were included under State and Private Ownership in Omnibus Table 4A Sheet 7.

Table 4. (Contd.) Status of Control on Non-federal Public and Private Lands, December 31, 1942

State	Ownership	Not Initially Worked		On Maintenance	
		Acres	Acres	Acres	Acres
		White Pine	Control Area	White Pine	Control Area
Illinois	Non-fed. Pub.	84	1,100	518	670
	Private	250	12,879	32	717
	Total	334	13,979	550	1,387
Indiana	Non-fed. Pub.	125	1,271	418	4,362
	Private	1,308	55,668	1,866	23,767
	Total	1,433	56,939	2,284	28,129
Iowa	Non-fed. Pub.	59	710	1	3
	Private	2,199	24,819	633	10,355
	Total	2,258	25,529	634	10,358
Michigan	Non-fed. Pub.	13,051	33,233	44,455	97,037
	Private	51,328	178,446	27,034	95,037
	Total	64,379	211,679	71,489	192,074
Minnesota	Non-fed. Pub.	26,110	59,419	11,214	20,790
	Private	21,282	68,719	10,966	28,200
	Total	47,392	128,138	22,180	48,990
Ohio	Non-fed. Pub.	11,158	54,962	357	3,503
	Private	8,755	172,870	2,410	47,321
	Total	19,913	227,832	2,767	50,824
Wisconsin	Non-fed. Pub.	6,024	22,135	8,399	21,952
	Private	103,922	504,293	11,968	54,198
	Total	109,946	526,428	20,367	76,150
Region	Non-fed. Pub.	56,611	172,830	65,362	148,317
	Private	189,044	1,017,694	54,929	264,895
Grand Total		345,655	1,190,522	120,291	413,012

a - Does not include 88 acres of white pine and 251 acres of Control Area which belong to National Parks. These figures were included under State and Private Ownership in Omnibus Table 4A Sheet 7.

BLISTER RUST CONTROL ON NATIONAL FORESTS,
NORTH CENTRAL REGION, 1942, PROJECT ELM-4

Objective

The objective of the Blister Rust Control Program on National Forests is to protect against blister rust all valuable white pine stands under Forest Service ownership. This involves initial and subsequent ribes eradication within infecting distances of white pine stands in order to bring such stands through to commercial maturity free from blister rust damage.

Memorandum of Understanding

Control work on National Forest lands is performed through a written Memorandum of Understanding between the Forest Service and the Bureau of Entomology and Plant Quarantine. The Forest Service is responsible for selection of pine areas to be protected, employment of labor and supervision, and operation of camps. The Bureau is responsible for the preparing of work plans and maps, keeping records, making reports, training of labor and supervision, and checking the adequacy of the control work.

Protective Zone Widths

Blister rust control involves the removal of ribes bushes within a pine stand and for a sufficient distance around it to ensure protection. Formerly, this protection zone width was 900 feet. Within recent years this width has been reduced materially depending on forest types concerned. In live swamps of alder, cedar, etc., the zone width has been reduced to approximately 50 feet, or one crew width. Studies have failed to show serious damage to pines from swamp ribes, except for short distances. Ribes eradication in swamps is expensive. Due to perpetual moist conditions, and ability of ribes to regenerate by layering, it is almost impossible to permanently eradicate ribes in swamps. For these reasons, it is wiser to accept a small loss, if any, among pines bordering the swamps in preference to the relatively high cost of swamp ribes removal. The eradication of ribes in swamp borders removes those most dangerous to the pines.

The zone width in dense woodland has been reduced to approximately 300 feet and in open woodland to 600 feet. The screening effect of forest growth is such a deterrent to the movement of pine infecting spores produced on ribes that under most conditions little pine infection results from ribes beyond such protection zones. In the open the full 900 foot zone is maintained.

Rust Conditions

General Status for 1942

Abundant rainfall and prolonged periods of high humidity, as in previous years, prevailed in 1942. As a result, a greatly increased intensification of the rust was noted. Blister rust on either pines or ribes is present in greater or lesser degree on all of the forests in Michigan, Wisconsin and Minnesota. It is less abundant on the Huron and Manistee Forests in Lower Michigan. In the other six forests, it is well established throughout the white pine belt and is intensifying rapidly in unprotected stands. The same conditions favorable to rust development were equally favorable to germination and growth of natural white pine seedlings. Unfortunately, however, in unprotected stands the present and potential loss of young white pines is far greater than the rate of establishment of new pines. This is particularly true on the Superior National Forest.

Significance of Present Rust Conditions

In order to better understand the significance of a small amount of pine infection in an unprotected stand, it is well to discuss briefly the development of pine infection. Three periods of development are recognized as follows:

- (1) Introductory Period
- (2) Period of Intensification
- (3) Period of Climax

(1) Introductory Period: This includes the period from initial pine infection to the time when approximately five percent of the pines are infected. It is characterized by relatively slow intensification of pine infection, ever increasing numbers of pines becoming infected at three or four year intervals. Negligible damage except on very small pines is apparent. Depending on ribes conditions and other factors, this period usually lasts from 4 to 10 years.

(2) Period of Intensification: This is the period of greatest increase in the number of pines becoming infected and in the formation of cankers. The percent of pines infected increases from about five percent to the approximate maximum of 90 to 95 percent. Waves of infection usually occur every year, particularly in advanced stages. Death of pines increases most rapidly in the younger age classes and more slowly among the larger trees. This period varies from 5 to 15 years depending upon volume of ribes, site, exposure, geographical and weather conditions.

(3) Period of Climax: This period may be described as one of saturation. The rust has reached its greatest concentration under existing conditions. The number of new cankers formed each year is smaller due to decreasing amounts of living pine foliage and defoliation of ribes leaves by the rust before sporidial production. Elimination by death of all white pine trees is complete to the degree that the forest is no longer a white pine stand. Not only are existing white pines killed by blister rust, but also white pine

reproduction as it appears. The length of this period is indefinite. It continues so long as living pine foliage is present and the causative ribes factor remains.

Studies of pine infections in this Region, particularly in the north, by Dr. Honey and others have shown that on areas where ribes and white pines are closely associated the rust builds up so rapidly that in 5 to 15 years, after the rust hits, there is nearly complete pine infection and shortly thereafter elimination of white pine as a tree of importance in the stand.

Surveys made by Dr. Honey on four ranger districts of the Superior National Forest in 1942 show the rust to be widely distributed and for the most part to be in the introductory stages. Areas of course exist where the rust has already reached the damage stage, but such areas are not as yet extensive. Dr. Honey's surveys indicate that at the present rate of increase we can expect heavy intensification of the rust and the damage stage in which 90 percent of the pines will be infected and killed within 5 to 15 years.

General Status of Control

From Table 3 it will be noted that of the 197,275 acres of white pine listed for protection, 109,384 have been initially worked and 31,359 are on maintenance. Most of the initial work remaining to be done involves natural stands, since all but approximately 4,500 acres of the 56,721 acres of planted pine have been given initial protection. Most of the planted pine remaining to be initially protected is found on the Chippewa National Forest.

Practically 75 percent of the natural white pine on Forest Service lands in this Region is found on the Superior and Chippewa National Forests. On these two forests there are over 104,000 acres of natural white pine of which less than 26,000 acres, or approximately 25 percent, have been given initial protection.

In 1942, as noted in Table 1, local control work was performed on the Marquette, Ottawa, Superior and Chippewa National Forests. Forest Service funds were used in protecting 5,548 acres of white pine by removing ribes from 7,366 acres of control area, both initial and rework, at the cost of 2,879 man-days. The Bureau, chiefly through the State W. P. A. Program, was responsible for protecting 1,675 acres of white pine by removing ribes from 4,356 acres of control area, both initial and re-eradication, at the cost of 1,631 man-days. Thus, the total work performed in 1942 provided for the protection of 7,223 acres of white pine by removing ribes from 11,722 acres at the cost of 5,401 man-days.

In Table 2 are shown the results of systematic checking after the 1942 ribes eradication. The average ribes F. L. S. found on all checking was practically seven F. L. S. per acre. Since the allowable maximum is 25 F. L. S. per acre, this average is encouragingly low. The great majority of the acreage checked showed less than 15 F. L. S. and all but 160 acres showed less than 25 F. L. S. per acre.

Status of Control by Forests

Manistee National Forest - Michigan

The Manistee Forest is the most suitable for white pine planting in the Region. It contains over 19,000 acres of planted white pine, which is more than twice as much as the planted white pine on any other forest. Very fortunately, in extensive oak forests under which white pine grows as well on the Manistee, ribes are generally scarce except in certain moist spots. From Table 3 it may be noted that there is no initial work remaining to be done. Of the 19,966 acres of white pine on the forest, 15,554 are on a maintenance basis.

Some initial work, as well as re-creditation work, was done on the Manistee in 1942. According to the official check, all of the acreage worked showed only slightly more than 3 F. L. S. remaining per acre.

While ribes infection is quite general over the forest, pine infection has been found only at a point near the Baldwin Ranger Station and at two points near Hayward City to the extreme southern corner.

Through an arrangement with the Manistee Forest Supervisor, the Lower Michigan Blister Rust District Leader examines prospective white pine planting sites to determine ribes conditions. By so doing, he is able to recommend against planting white pine on the few areas where ribes are heavy and to encourage the planting where ribes are not abundant. This procedure saves many man-days of ribes eradication.

Huron National Forest - Michigan

There is not a great deal of either natural or planted white pine on the Huron. The 1,214 acres have all been initially protected and 5% acres are on maintenance. No control work was done in 1942.

Blister rust infection conditions are not too severe. While ribes infection is general, the only known pine infection is found near Mio and in the vicinity of East Tawas. No very large control program is needed on the Huron until additional areas of white pine are planted.

Marquette National Forest - Michigan

Planted and natural pine make up, somewhat equally, the 10,691 acres listed for protection. There remain approximately 1,000 acres of each to be initially protected. About one-third of the acreage is on a maintenance basis. This third is mostly in the northern part of the forest bordering Lake Superior. No work was done in 1942.

While rust on ribes is generally prevalent over the area, pine infection is known to be present south of Moran and at a spot northwest of Rudyard and one near Highway M. 28 southwest of Base.

Work remaining to be done on this forest involves the initial protection of 2,000 acres of white pine requiring the removal of ribes from 4,250 acres of control area and the postchecking of white pine areas initially worked to find out whether additional workings are necessary or whether the areas can be placed on maintenance.

Elavetha National Forest - Michigan

Of the 6,857 acres of white pine listed for protection, approximately two-thirds are natural and one-third planted. The planted pine has all been given initial protection. There remain 768 acres of natural pine to be initially protected by removing ribes from 3,295 acres of control area. Of the 6,857 acres of white pine, 3,668 acres are on maintenance. No work was done in 1942.

Ribes infection is generally distributed on the forest. Several pine infection centers have been found near Sagid River, Munising, Steuben, and on the Upper Peninsula Experimental Forest in Marquette County.

Work recommended for the Elavetha involves the initial working of white pine not yet protected and the postchecking of areas previously worked to determine whether they can be placed on maintenance or whether additional workings are necessary.

Ottawa National Forest - Michigan

The Ottawa National Forest contains the largest amount of white pine of all the National Forests in Upper Michigan. The 13,309 acres of white pine are made up of 8,526 acres of natural pine and 4,783 acres of planted pine. Practically all of the planted pine has been given initial protection and the 1,849 acres of white pine remaining to be initially protected are predominantly natural stands. Ribes conditions are quite heavy on the Ottawa and only 776 acres of pine are on maintenance.

Some work, both initial and re-eradication, was done on the Ottawa by the Bureau-sponsored State W. P. A. project in 1942. No Forest Service funds were used on this forest for blister rust control. A total of 156 acres of white pine was protected initially and 288 acres for the second time by the removal of 133,163 ribes from 1,104 acres of control areas at a cost of 849 man-days.

Pine infection conditions are quite serious on certain parts of the forest, particularly north and west of Iron River. Pine infection is also present south of Rockland, near Ironwood, northeast of Connersville and near Lake of the Woods. Fortunately, at these three last-named places, there are no extensive areas of white pine. The most serious infections are found in the general vicinities of Gibb City and Elmwood northwest of Iron River.

Because young pines are coming in in excellent fashion and because the rust is intensifying rapidly, immediate ribes re-eradication is necessary, and should be performed in 1943, on areas worked initially several years ago in order to prevent as much as possible further loss in young white pine stands.

Nicolet National Forest - Wisconsin

Of the 12,085 acres of white pine listed for protection on the Nicolet, 6,835 are planted and 5,250 are natural pine. Ribes conditions are quite bad in certain areas of this forest. For the most part, white pine is in two general groups on the forest, one in Vilas County in the northwestern portion of the forest and the other in the Lakewood district at the southern end. While all of the approximately 1,000 acres of pine have been initially worked, only 356 acres have been placed on maintenance, because of the abundance of ribes found on the forest and the necessity for working most of the pine areas more than once. No work was done in 1942.

Rust conditions are quite severe on the forest and considerable damage has been done in unprotected stands. On certain areas, worked for the first time several years ago, the rust has become established on ribes developed since the initial eradication and prompt reeradication is necessary to prevent serious loss.

Postchecks have been made on several of the areas of the forest by Mr. Stast and others. Recent inspections of some of these same areas indicate that the rust is becoming established in such areas and prompt reworking of young stands, where ribes conditions indicate most pressing need, should be done in 1943.

Chequamegon National Forest - Wisconsin

The Chequamegon contains not only the largest amount of white pine on National Forests in Wisconsin, but also the greatest amount of natural pine. Most of the natural pine as well as a considerable amount of planted pine is located in the general vicinity of Drummond where it occupies extensive contiguous areas. Most of the white pine has been initially worked on this forest. There are 1,682 acres of white pine on maintenance basis and this is located chiefly in the northern part of the forest. No ribes eradication was performed on this forest in 1942.

While ribes infection is quite general over the forest, known pine infection centers are chiefly limited to the vicinity of Drummond. In places, the rust is intensifying quite rapidly on pines.

Work recommended for the future should include examination of areas initially worked several years ago to determine present ribes conditions and to classify such worked areas into those needing additional work and those on maintenance. Stands where the pines are young and ribes conditions are bad, should be worked immediately to prevent serious loss from the rust.

Superior National Forest - Minnesota

Not only is the Superior National Forest the largest one in the United States and one of the most inaccessible, but also contains by far the largest amount of white pine of any in this Region. Listed in Table 3, are 91,720 acres of white pine worth protecting. This pine has practically all been mapped. It is conservatively estimated that there exists an additional 100,000 acres of white pine not yet mapped. While over 21,000 acres of white pine have been initially protected, they represent less than 25 percent of the total white pine to be initially protected on this forest. During the recent wet years white pine has seeded in and has become established at a rapid rate in the forests of birch and aspen. There are extensive areas of this type of white pine on the forest which have not been protected. The rust is in the early stages and is intensifying rapidly over practically all of the forest.

A considerable amount of work was done in 1942 on the Superior National Forest with Forest Service funds, and a smaller amount, under a Bureau-sponsored State W. P. A. project. Considering both initial and second eradication, 5,140 acres of white pine were protected by the Forest Service by destroying 396,543 ribes on 6,109 acres at the cost of 2,692 man-days. On the Bureau sponsored project, 323 acres of pine were protected by removing 17,051 ribes from 719 acres at the cost of 383 man-days. Forest Service work was confined to the Isabella area and the State W. P. A. work to a large 1936 planting near Aurora.

Rust conditions are bad on this forest. Several areas exist where the damage stage has been reached and pines are too far gone to protect. Dr. Soney made an extensive survey of rust conditions in four Ranger Districts on the forest in 1942. He found the rust to be well established and generally in the introductory stage with large numbers of cankers formed in 1937 and 1938. According to previous studies of the rate of rust development, we may expect upwards of 90 percent loss of young white pines on most of the unprotected stands by 1948 to 1950.

As much blister rust control work is planned for 1943 as labor conditions will permit. Through surveys and well thought-out plans, it is expected that the limited man-power available will be devoted to those young pine stands largest in area, where the threat from blister rust is most serious and where the greatest values exist. By so doing, we hope to get the most good from protective money expended.

Chippewa National Forest - Minnesota

The Chippewa National Forest is also a good white pine growing forest. The 24,724 acres of white pine are made up of 17,510 acres of natural pine and 7,214 acres of planted pine. It is thus second to the Superior in the amount of natural pine and second to the Marquette in planted pine. White pine occurs naturally on the Chippewa in association with red pine under which it grows well and eventually makes up the larger portion of the stand. In such situations ribes conditions are not too bad. Most of the white pine planting has been done in the southern part of the forest.

Through a workable arrangement between the blister rust District Leader and the Forest Service Supervisor all prospective planting sites are examined by the blister rust representative prior to planting and his recommendations for or against planting, on account of ribes, are followed. Ribes are abundant in the extensive swamps which occur in long narrow strips and pot holes. By keeping away from such areas the ribes eradication problem is considerably reduced.

Some work was done on the Chippewa in 1942, entirely by the Bureau-sponsored State W. P. A. Program. A total of 307 acres was initially protected by removing 199,767 bushes from 672 acres at a cost of 335 man-days. Unfortunately the lack of Forest Service funds has left incomplete much urgently needed control work.

Ribes infection is general on the forest. Infection on pine is most abundant in the southwestern portion of the forest near Cass Lake and Walker. In places the rust has reached the damaging stage.

Work needed in the future includes a considerable amount of postcheck on areas previously worked, as well as an examination of areas not yet initially worked. Owing to the rapidity with which the rust is spreading, ribes eradication is urgently needed on certain areas to prevent serious loss of young pine. Most of the areas needing initial eradication are in the northern part of the forest.

Wayne National Forest - Ohio

According to the records there are 199 acres of planted pine on this forest. Fortunately, it is located in the southern portion of Ohio which is for the most part ribes-free. Pine grows in excellent fashion in this part of the State. Only 56 ribes were found and removed from within the protection zone limits of these plantations. It is probable that white pine could safely be planted on suitable sites on the Wayne National Forest with little or no blister rust control problem involved.

Expenditures

Expenditures by National Forests in Region 9 and sources of funds for blister rust control in 1942, are shown in the Table on the following page:

Costs of Ribes Eradication, National Forests, Region 9-1942

National Forest	Forest Service Control			Bureau Control			Grand Total
	Regular	C.P.S.	Total	Regular	State W.P.A.	Total	
Manistee	-	\$291.59	\$291.59	\$117.29	\$34.92	\$152.21	\$444.10
Ottawa	-	-	-	-	3,089.59	3,089.59	3,089.59
Superior	\$14,752.28	-	14,752.28	-	1,934.75	1,934.75	16,687.03
Chippewa	-	-	-	-	1,317.00	1,317.00	1,317.00
Subtotal							
Total							
<u>Mapping, Surveys, etc., 1942</u>							
Superior	723.68	-	723.68	1,765.32	7,073.38	8,839.70	9,563.38
Chippewa	-	-	-	225.00	120.48	345.48	345.48
Milwaukee (State)	979.14	-	979.14	-	-	-	979.14
Subtotal							
Total							

Recommendations for 1943

Specific recommendations are given in discussions of the work on each forest. In planning work for the immediate future two factors must be carefully considered:

- (1) Rust is thoroughly established and intensifying so rapidly that in many cases a delay in ribes eradication of one to a few years will mean the loss of young pine stands from blister rust.
- (2) Man power available is so scarce and in places lacking as to preclude the performance of necessary control work. In order not to compete with labor engaged immediately in the war effort, such as logging in the forested areas, older men and high school boys can be used in blister rust control.

Within the above two limitations, the major effort should be expended

on the Superior National Forest. In selecting areas for work emphasis in 1943 should be placed on: (1) Young well-stocked white pine stands; (2) they should be in large blocks; (3) rust should be in the early stages only so that eradication work will save sufficient trees to constitute a mature white pine stand.

Table 1. Local Control on Forest Service Lands by National Forest and Agency,
North Central Region, 1942

National Forest	Agency	No. Areas	Acres W.P. Protected		Acres Destroyed	Dibbs	B-Gr.	Costs		
			Natural	Planted				Total	Worked	Pulled	W.D's.	Amount
Initial Eradication										
Manistee	F.S.	4	-	378	378	1,127	18,504	170	394.31	
	Bur.	7	205	316	521	1,760	8,771	0	69.76	
Subtotal		11	205	378	583	2,887	27,275	170	464.07	
Ottawa	Bur.	2	12	28	40	281	2,702	800	1,881.71	
Superior	F.S.	2	171	-	171	101	1,870	22	36.25	
Chippewa	Bur.	7	241	-	241	717	17,457	75	1,177.00	
Grand Total		22	429	406	835	1,169	48,534	1,047	3,368.32	
Re-Eradication										
Manistee	F.S.	1	-	30	30	130	119	8	13.26	
	Bur.	1	80	-	80	80	1,231	8	27.92	
Subtotal		2	80	30	110	210	1,350	16	41.18	
Ottawa	Bur.	2	-	200	200	21	4,504	25	4,504.25	
Superior	F.S.	35	3,458	1,265	4,723	5,697	38,986	2,481	14,502.13	
	Bur.	3	-	323	323	719	17,051	383	1,934.72	
Subtotal		38	3,458	1,588	5,046	6,416	56,037	2,864	16,436.85	
Total Re-eradication		40	3,538	1,618	5,156	7,145	74,388	2,909	20,912.23	
Total Eradication										
Manistee	F.S.	5	-	408	408	1,257	18,623	178	394.39	
	Bur.	8	285	316	601	1,820	12,311	14	69.51	
Subtotal		13	285	408	693	3,077	30,934	192	463.90	
Ottawa	Bur.	2	12	28	40	281	2,702	800	1,881.71	
Superior	F.S.	37	3,675	1,265	4,940	5,816	39,543	2,498	14,752.26	
	Bur.	3	-	323	323	719	17,051	383	1,934.75	
Subtotal		40	3,687	1,588	5,275	6,535	56,594	2,881	16,687.01	
Chippewa	Bur.	7	241	-	241	717	17,457	75	1,177.00	
Grand Total		82	4,124	3,012	7,136	14,727	115,085	5,005	41,641.97	

Table 2. Results of Checking After Ribes Eradication on National Forest Lands,
North Central Region, 1962

National Forest	No. Areas	Checking After Eradication				Classification of Forested Areas			
		Acrea	Worked	Strip	Ribes Found	Ribes per Acre	0.0 to 15.0	15.1 to 25.0	25.1 to 50.0
		Acres	Acres	Acres	Bushes	F.L.S.	Bushes	F.L.S.	Acres
Manitowish	13	3,077	60.50	22	76.2	0.36	3.14	3,077	-
Ottawa	4	1,145	8.00	49	86.0	6.12	10.75	315	784
Superior	*23	*3,815	78.91	224	790.7	2.84	10.02	3,287	394
Chippewa	7	672	13.76	83	167.0	6.03	12.14	470	202
Totals	27	8,709	161.17	378	1,109.94	2.54	6.25	7,149	1,090

* 17 Areas with 3,013 acres additional, worked on re-eradication, not officially checked.

Table 3. Status of Control on Forest Service Lands Within National Forests,
North Central Region, on December 31, 1942

National Forest	Total Control Problem				Net Acres Initially Worked				Net Acres Not Initially Worked				Net Acres on White Pine Control			
	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted	Planted
	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine	Pine
Huron	152	1,062	1,214	5,052	152	1,062	1,214	5,052	-	-	-	-	536	2,636	-	-
Manistee	732	19,236	19,968	61,400	732	19,236	19,968	61,400	-	-	-	-	15,454	47,658	-	-
Marquette	5,551	5,140	10,691	25,299	4,349	4,323	8,672	21,049	2,019	4,250	4,250	4,250	3,404	8,460	-	-
Hiaawatha	4,224	2,633	6,857	20,872	3,456	2,633	6,089	17,577	768	3,295	3,295	3,295	1,668	5,047	-	-
Ottawa	8,526	4,783	13,309	28,118	6,846	4,612	11,460	21,888	1,649	6,230	6,230	6,230	776	1,616	-	-
Miccollet	5,250	6,835	12,085	30,569	4,428	6,655	11,083	26,171	1,002	4,398	4,398	4,398	356	1,035	-	-
Chequamegon	11,776	4,732	16,508	41,265	11,311	4,380	15,691	37,644	817	3,621	3,621	3,621	1,681	3,804	-	-
Superior	86,833	4,887	91,720	154,991	16,656	4,586	21,242	32,559	70,478	122,432	122,432	122,432	1,792	1,878	-	-
Chippewa	17,510	7,214	24,724	58,302	9,237	4,529	13,766	33,940	10,958	24,362	24,362	24,362	5,524	12,697	-	-
Wayne	-	199	199	1,798	-	199	199	1,798	-	-	-	-	147	1,090	-	-
Total	120,821	48,821	169,642	447,644	71,138	28,708	99,846	150,477	171,211	168,080	168,080	168,080	11,028	5,920	5,920	5,920

BLISTER RUST CONTROL ON INDIAN RESERVATIONS
NORTH CENTRAL REGION FINANCIAL PROJECT BLR-7

Objective

The objective of the blister rust control program on Indian Reservations is to protect against blister rust all valuable white pine stands administered by the Indian Service. This involves initial and subsequent eradication of ribes from within infecting distances of white pine stands in order to bring such stands through to commercial maturity free from blister rust damage.

Memorandum of Understanding

Control work on Indian Reservation lands is performed through Memoranda of Understanding between the U. S. Indian Service and the Bureau of Entomology and Plant Quarantine. The Indian Service is responsible for selecting the pine areas to be protected and the employment of labor and supervision. The Bureau of Entomology is responsible for the preparing of work plans and maps, keeping records, making reports of work accomplished, training of labor and supervision and checking the adequacy of the control work.

Protective Zone Widths

The control of white pine blister rust involves the removal of currant and gooseberry bushes, the alternate hosts, from within the pine stand and from the immediate surrounding area. Within this report currant and gooseberry bushes will be hereafter referred to as "ribes". Under most conditions a protective zone width of 900 feet is considered adequate. During recent years studies have indicated that it is not necessary under certain conditions to maintain a full 900 feet protective zone width. Due to the effect of screening by vegetation, zone widths have been reduced in swamps and woods depending on the density of forest cover. The protective zone widths have now been reduced to approximately 50 feet in swamps, 300 feet in dense woods, 600 feet in open woods, but retaining the full 900 feet in open fields or meadow types. The screening effect of dense swamp growth hinders the dissemination of sporidia from infected ribes to the pines in the upland. The movement of spores from swamps is further hindered by the fact that most swamps are heavily shaded and cool, therefore preventing the formation of rising air currents.

By reducing these zone widths the cost of eradication is considerably lessened. Ordinarily one crew width along the edge of a swamp will

be adequate to prevent heavy infection of the adjoining pine stand. These reductions in zone widths may not give complete protection but will provide protection sufficient to bring a fully-stocked stand of pine through to commercial maturity.

Rust Conditions

General Status for 1942

Abundant rainfall and prolonged periods of high humidity were again evident in 1942. These conditions are conducive to the spread of blister rust since they offer optimum conditions for the development of the disease. These more or less optimum conditions have been prevalent since and including 1937. Blister rust has spread and intensified particularly in the northern portions of the three Lake States.

Blister rust has been found on white pine in all of the reservations except the Sac-Fox, Grand Portage, Vermilion and Lac du Flambeau. Infected ribes have been found on all reservations except the Sac-Fox and Lac du Flambeau. Undoubtedly, infected pine would be found on the Grand Portage, Vermilion and Lac du Flambeau Reservations if time permitted adequate inspections since infected white pines have been found near these reservations. The earliest infection found was on the Menominee Reservation in 1918. Fortunately ribes eradication was started in time to save large areas of pine from excessive losses.

Significance of Present Rust Conditions

In order to better understand the significance of a small amount of pine infection in an unprotected stand it is well to discuss briefly the development of infection. Three periods of development are recognized as follows: (1) Introductory Period; (2) Period of Intensification; and (3) Period of Climax.

(1) Introductory Period: This includes the period from initial pine infection to the time when approximately 5 percent of the pines are infected. It is characterized by relatively slow intensification of pine infection, with increasing numbers of pines becoming infected at 3 or 4-year intervals. Negligible damage except on very small pine is apparent. Depending on ribes conditions and other factors this period usually lasts from 4 to 10 years.

(2) Period of Intensification: This is the period of the greatest number of pines becoming infected and the formation of cankers. The percent of pines infected increases from about 5 percent to the approximate maximum of 90 to 95 percent. Waves of infection usually occur every year particularly in advanced stages. Death of pines increases most rapidly in the younger age classes and more slowly among the larger trees. This period varies from 5 to 15 years depending on values of ribes, site, exposure, geographical and weather conditions.

(3) Period of Climax: This period may be described as one of saturation.

The rust has reached its greatest concentration under existing conditions. The number of new cankers formed each year is smaller due to a decreasing amount of living pine foliage and defoliation of ribes by the rust before sporidial production can take place. Thus the gradual elimination by death of all white pine trees is complete to the degree that white pine is no longer an important part of the forest stand. Young white pines, as they are produced by germinating seed in the duff, are killed very rapidly, eventually eliminating even the sources of seed from seed trees or that which is stored in the duff. The length of this period is indefinite. It continues so long as living pine foliage is present and the caustic ribes factor remains. Studies of pine infection in this Region, particularly in northeastern Minnesota, indicate that on areas where ribes and white pine are closely associated the rust builds up so rapidly that in 5 to 15 years after the rust starts there is nearly complete pine infection and shortly thereafter, elimination of white pine from the forest stand.

Control Accomplishments in 1942

Ribes eradication was done on the Menominee and Red Lake Indian Reservations during 1942. All work on the Menominee Reservation was done on areas having previously been given initial protection. Parts of three jobs needed additional work to remove dangerous concentrations of ribes in lowlands and adjoining areas. As noted in Table 1 there were 938 acres of control area covered on the Menominee Reservation. From this acreage 127,120 ribes bushes were removed with an expenditure of 965 man-days. There was an average of 129 ribes bushes removed per acre at a cost of 0.97 man-days per acre.

Local control work on the Red Lake Indian Reservation consisted of a small amount of rework needed to protect an extension of a plantation established in the spring of 1942. This plantation extended beyond the limits of a control zone previously worked in Section 36, Township 153, Range 34. A total of 33,658 ribes was removed from 22 acres of control area with an expenditure of 39 man-days. All local control work on the Red Lake and Menominee Indian Reservations was performed with Indian Service C. O. O. labor and supervision. The Bureau of Entomology and Plant Quarantine provided technical direction and training to field men, made revised maps for part of the work area and checked the adequacy of the control work.

Checking

All of the 938 acres of control area on the Menominee Reservation were given an official check by the Bureau of Entomology and Plant Quarantine. The average number of ribes bushes found per acre after eradication amounted to 4.1 with an average of 7.1 F. L. S. per acre. A total of 317 acres of control area had less than 15 F. L. S. per acre remaining after eradication and 171 acres had from 25 to 50 F. L. S. per acre. The 171 acres which did not pass the check according to the present standard of 25 F. L. S. or less per acre will require additional work.

No formal check was made of the work done on the Red Lake Reservation because the job was not completed. However, spot checks made while the crew was working indicate that effective work was being done and that the areas covered would pass a formal check. Good work has generally always resulted from the use of Indians on ribes eradication. This past experience was again borne out in the 1942 work.

General Status of Control

Table 2 shows the status of blister rust control on Indian Reservations to December 31, 1942. It will be noted that there are 96,416 acres of control area of which 76,573 have been initially worked. This leaves 19,843 acres of control area yet to be initially worked. A total of 3,369 acres has been placed on maintenance. This means that the acreage placed on maintenance will not require additional control work until such time as an ecological change has occurred which favors the development and regeneration of ribes. It will be noted in Table 2 that initial control work has been completed on the Sac-Fox, Vermilion, White Earth and Lac du Flambeau Reservations.

Status of Control by Reservations

Sac-Fox

The Sac-Fox Indian Reservation located approximately in the center of the State of Iowa has only 10 acres of planted white pine. These 10 acres have been protected by working 206 acres of control area. These 10 acres of planted pine were protected by the Indian Service E. C. W. in 1934. A total of 2,980 ribes bushes were removed by an expenditure of 58 man-days. No blister rust infection has been found on the reservation. Ribes infection has been found, however, in Tama County.

Grand Portage

The Grand Portage Indian Reservation located in northeastern Minnesota contains approximately 411 acres of white pine. Of this total 361 acres have been protected leaving 50 acres still to be initially worked. No local control work has been done on this reservation since 1939. The remaining 50 acres of white pine to be protected is a plantation more commonly known as the Cascade White Pine Plantation on Pigeon River.

Blister rust infection has been found on ribes within the reservation. Pine infection has not yet been found within the reservation although near-by pines were found infected. If additional scouting for the rust is done, it is believed that infection on white pine will be found since the spread of rust has been rapid throughout the extreme northeastern part of Minnesota. Ribes are abundant on the reservation and it is felt that infection will be severe within a short time.

Nett Lake

There are approximately 5,975 acres of white pine on the Nett Lake Reservation of which 5,023 have received initial protection. There remains 952 acres to be protected. Additional control work is set up in the work plan for 1943.

Blister rust on white pine was found for the first time on the Nett Lake Reservation in 1942. This pine infection was found in Section 31, Township 65N., Range 22W. Approximately 10 percent of the pine in an unprotected plantation established in 1937 and 1938 was found to be infected. Most of this infection appeared to originate in 1938. Additional scouting should be done on the reservation since it is believed that infection will be found widely distributed and intensifying rapidly.

Red Lake

The Red Lake Indian Reservation contains the largest body of white pine of all the reservations located in Minnesota. There are 12,570 acres of white pine considered worth protecting, of which 12,498 have been initially protected. There remain only 72 acres of planted pine in Clearwater County which should be given initial control work.

During 1942, 22 acres of control area were worked from which 33,658 ribes were removed with an expenditure of 39 man-days. Control work was carried on during the month of June. This work was being performed by Indian Service C. C. C. but the job was not completed due to the termination of the C. C. C. Program on June 30, 1942.

The first blister rust to be reported on the Red Lake Forest was found on pine and ribes during the summer of 1933 along the south shore of upper Red Lake, Section 21, Township 15S, Range 33. This is the only known pine infection within the reservation. Ribes infections have occurred almost each year since then but the amount of infection has become lighter each year. In 1941 only a few lightly infected ribes leaves were found. During 1942, no infection was found on either pine or ribes.

There is no work planned for the Red Lake Reservation during 1943. Since the establishment of blister rust control on the reservation is essentially completed it is believed that control activities can be suspended for the duration of the war with little danger of blister rust causing any appreciable loss of white pine. As opportunities permit, postchecking should be performed to determine when additional work is required to prevent the ribes from returning to dangerous concentrations.

Vereilion Indian Reservation

There are 72 acres of native pine considered worth protecting on this reservation, all of which have been initially protected.

Infection was found for the first time on wild ribes in 1933. There has been no pine infection found although some was found on the east side of

Pike Bay, about one mile away, in 1941. Since this pine block has also received one re-eradication, it is believed that the area is sufficiently protected for several years.

White Earth

There are 495 acres of white pine on the White Earth Indian Reservation all of which has been protected. A considerable portion of this acreage has received re-eradication and it is believed that the pine is adequately protected for at least the duration of the war. Periodic pestchecking would be desirable to determine the control status on this reservation.

Pine infection was found for the first time in 1941. One branch canker was found within the pine stand in Section 20, Township 144N., Range 39W. Since this reservation is on the western edge of the white pine belt there has been very little infection found in the area. During 1941, several hundred ribes were inspected, but no infection could be found.

Bad River

There are 6,316 acres of white pine considered worth protecting on the Bad River Indian Reservation. Of this total, 3,796 acres has been initially protected leaving 2,520 acres to be initially protected. No work has been done on this reservation since 1940. Considerable work is required to protect the pine stands from excessive damage.

White pine blister rust has been found on both pine and ribes. Heavy concentrations of ribes growing in association with white pine presents great danger to the pine stands. It is planned to do some control work during 1943.

Menominee

The Menominee Indian Reservation contains the largest amount of white pine of all the reservations in this Region. There are approximately 19,491 acres of white pine which is considered of sufficient stocking to warrant blister rust protection. Of this total 15,539 acres have received initial protection and are now in the process of receiving reworkings when funds permit. Approximately 25 percent of the pine acreage has received a first reworking. No acreage has yet been placed on maintenance because ribes regeneration after eradication is common. The majority of the white pine on the Menominee Reservation is natural pine. Only 334 acres of the total pine is planted, all of which has received initial protection.

During 1942, rework was performed on three high priority white pine areas, but only one job was completed when C. C. C. operations were suspended. A total of 736 acres of white pine was protected by removing 127,120 ribes bushes from 933 acres of control area.

Blister rust infection on white pine was first found in 1918 around the Village of Keshena. Since then it has spread to every known white pine area within the reservation. Local control, however, has been effective in preventing great losses which would have occurred. The percent of infected trees is definitely on the decline in areas which have received initial protection. With control work continuing each year on approximately the same

scale as has been the case in the past, it is believed that the white pine forests can be maintained and new white pine reproduction brought through to maturity.

It is planned to continue local control work in 1943 with whatever labor becomes available. It is believed that women can be used for ribes eradication and this may be a necessity during the war period. It is hoped that approximately 25 workers can be employed for 4-1/2 months during 1943.

Lac Court Oreilles

On the Lac Court Oreilles Indian Reservation there are approximately 2,380 acres of white pine worth protecting of which 2,267 have received initial work. This leaves 113 acres of pine to be protected. At the present time there are 116 acres of white pine which have been placed on a maintenance basis and will require only periodic checking to determine the status of ribes and infection.

Infected ribes and pines have been found on this reservation. Infection is on the increase and will undoubtedly intensify within a few years to a point where the young white pines can no longer survive. In parts of the reservation white pine is associated with an abundance of ribes. Efforts should be made to complete the remainder of the initial work and by means of postchecking determine which areas are again in need of a re-eradication. Re-eradication, if completed before young ribes produce seeds, will aid considerably in eventually eliminating ribes from the white pine stands.

Lac du Flambeau

This reservation is in good condition so far as initial ribes eradication is concerned. There are 1,956 acres of white pine all of which have been given initial protection. Postchecking should be done as soon as possible in order to determine the status of the rust and the regeneration of ribes within the pine stands. As previously mentioned, it is important that ribes be eliminated before they become old enough to produce seed. It is also necessary to remove these regenerating ribes before they become large in size and therefore more exposed to infection and capable of spreading this infection.

At the present time no infection on either pines or ribes has been found. However, since infection has been found in the vicinity, it is believed that careful inspections throughout the reservation would reveal the rust to be present. No local control work will probably be done for the duration of the war because of the shortage of manpower. It is inevitable that losses will occur from blister rust but it is believed that the losses will not be great enough within the next few years to preclude the continuation of white pine forests.

Table 1a. Resurvey of Unworked Pines, North Central Region, 1942.

Agency Performing Work	Total Examined			Not Worth Protecting			Worth Protecting			Costs	
	No. Areas	Acres	Control Area	Acres	White Pine	Control Area	Acres	White Pine	Control Area	8-Hour Man-days	Amount
Bur. Regular	6	3,446	8,797		240	1,460		3,206	7,337	5	66.10
State	48	2,475	11,921		1,325	6,587		1,120	5,334	1a	7.05
State-W.P.A.	52	2,357	13,803		1,488	7,693		869	6,110	38	228.79
Total	106	8,278	34,521		4,053	19,740		5,195	18,781	43	401.94
Bur. Regular		1,280	18,882		1,260	11,882		-	-	7	
					Ohio						
Bur. Regular	5	4,048	6,330		-	-		4,048	6,330	13	150.00
State	15	544	2,999		171	1,349		363	1,650	4	39.00
Total	30	4,592	9,329		371	1,349		4,411	7,980	17	189.00
Bur. Regular	11	8,754	34,009		1,500	20,342		7,254	13,657	18	216.10
State	63	3,009	14,920		1,326	7,936		1,483	5,984	5	46.05
State-W.P.A.	32	2,557	15,803		1,488	7,693		869	6,110	38	228.79
Region Total	106	14,310	62,732		4,314	35,971		9,608	25,751	61	480.94

a - Performed in connection with Local Control.

b - Charged to agent activities.

Table 2. Summary of Initial Local Control by States and Agencies, North Central Region, 1942:

Table 24. Summary of Re-employment by Status and Duration, North Central Section, 1942.

State	Agency	No. Areas	Areas W.P. Protected		Total W.P.P.A.	Total Worked	Number Hired	Total Sum-days	Total Costs
			Returned	Fluctuated					
Illinois	Reg.-Coop.	11	-	64	64	2,331	20,226	903	1,140,312
	Reg.-Coop.	2	-	261	261	8,070	11,747	144	20,226
	Reg.-Coop.	59	-	29	29	266	2,068	85	144,205
Iowa	State-W.P.A.	113	-	61	61	573	12,475	245	500,000
	Total	174	-	70	70	839	13,521	334	2,544,833
Michigan	Reg.-Coop.	55	6,356	534	6,790	15,463	82,459	687	5,572,577
	F.S.-C.P.A.	1	-	30	30	130	119	8	13,229
	State-W.P.A.	197	15,774	1,150	17,164	51,153	610,957	7,060	28,877,530
Minnesota	Total	253	21,930	2,074	23,804	66,746	1,024,435	7,755	34,463,336
Missouri	Reg.-Coop.	9	659	243	908	1,341	53,149	617	5,353,527
	F.S.-Reg.	53	3,653	1,265	4,968	5,557	385,985	2,551	14,302,412
	I.S.-C.C.O.	1	-	-	-	20	33,698	35	51,000
Nebraska	State-W.P.A.	52	2,170	306	2,686	6,011	168,498	2,751	15,301,707
	Total	71	2,829	2,014	4,843	13,212	247,187	3,003	19,707,646
Ohio	Regular	7	-	53	53	482	40	6	20,226
	Reg.-Coop.	56	12,628	1,656	14,284	41,842	137,951	1,321	10,373,665
	I.S.-C.C.O.	3	736	-	736	588	127,120	163	1,244,013
Wisconsin	Total	66	13,364	1,656	15,020	43,972	265,071	2,004	11,617,684
	Total	205	43,217	3,806	47,023	146,791	1,360,204	16,009	68,000,200

Table 2b. Summary of Initial and Re-eradication Work by States and Agencies, North Central Region, 1942

State	Agency	Sp. Acres	Acres N. P. Protected		Acres Worked	Bumbar Rings Pulled	Total Man-days	Total Cost.
			Natural	Planted				
Illinois	Reg.-Coop.							
Indiana	Reg.-Coop.							
Iowa	Reg.-Coop.	237	-	87	974	17,387	430	4,517.36
	State-N.P.A.	516	-	183	2,370	64,022	943	3,853.19
	Total							
Michigan	Reg.-Coop.	249	12,007	2,602	47,724	377,944	2,125	10,516.18
	State-N.P.A.	296	22,011	2,412	79,815	1,587,579	10,890	45,063.79
	Total							
Minnesota	Reg.-Coop.	12	837	215	1,665	71,442	926	3,359.69
	P.S.-Reg.	37	3,875	1,865	6,109	398,543	2,692	14,752.29
	I.S.-Coop.	1	-	-	22	33,628	39	61.00
	State-N.P.A.	45	2,502	675	6,139	795,413	3,404	16,081.30
	Total							
Ohio	Reg.-Coop.	42	122	1,598	7,923	12,234	449	1,122.42
	S.C.S.	2	-	9	204	699	12	56.00
	Total							
Wisconsin	Reg.-Coop.	205	16,727	4,589	66,086	234,493	2,037	15,657.94
	I.S.-Coop.	3	736	-	988	127,120	963	3,944.65
	Total							

State	Ownership Class	No. Acres	Total A.P. Valuation		Asses. Valued	Asses. Refined	Census Valued	Asses. Refined	Total Costs
			Public	Private					
Illinois	Other Public	1	-	11	1,351	179	1,530	17	1,547
	Private	11	-	12	1,351	1,530	1,530	17	1,547
	Total	12	-	23	2,702	3,060	3,060	34	3,094
Indiana	Other Public	2	-	9	3,202	734	3,936	30	4,066
	Private	12	-	101	14,003	2,853	16,856	285	17,141
	Total	14	-	110	17,205	3,587	20,792	315	21,107
Iowa	Private	273	-	300	54,666	1,162	56,828	1,162	57,990
	G.R.P.R.	13	287	700	109,503	3,551	113,054	676	113,730
	Other Public	69	1,652	705	120,287	7,517	127,804	804	128,608
Total	Private	270	10,119	1,647	711,826	16,915	728,741	1,660	730,401
Michigan	Other Public	9	164	105	301,524	884	302,408	1,045	303,453
	Private	6	172	65	135,356	1,251	136,607	582	137,189
	Total	15	336	170	436,880	2,135	439,015	1,627	440,642
Minnesota	Other Public	4	-	575	12,193	1,535	13,728	1,600	15,328
	Private	53	122	657	609	5,829	6,438	57	6,505
	Total	57	122	1,232	12,802	7,364	19,166	1,657	20,823
Nebraska	Other Public	73	2,371	2,570	11,000	11,000	22,571	1,000	23,571
	Private	12	1,500	575	61,573	10,415	72,988	500	73,488
	Total	85	3,871	3,145	72,573	21,415	95,559	1,500	97,059
Total	Total	1,280	27,002	8,435	1,357,677	63,000	1,420,677	8,000	1,428,677

Table 2d. Summary of Re-eradication, by States and Ownerships, North Central Region, 1942.

State	Ownership Class	No. Acres	Acres W.F. Protected	Pl. Sites	Total	Acres Worked	Winter Rites Pulled	8-Hour Men-days	Total Cows
Illinois	Other Public	8	-	458	458	1,750	48,405	231	1,667.12
	Private	3	-	146	146	565	7,158	77	652.02
	Total	11	-	604	604	2,315	55,563	308	2,319.14
Indiana	Other Public	2	-	233	233	2,070	14,767	444	780.50
	Private	174	-	70	70	809	25,503	291	1,331.06
	Total	176	-	303	303	2,879	40,270	735	2,111.56
Michigan	U.S.I.S.	4	60	318	398	861	43,111	555	1,909.00
	Other Public	57	7,003	1,051	8,054	16,108	133,633	1,449	5,050.30
	Private	172	14,827	705	15,532	49,777	945,521	6,221	26,104.54
Minnesota	Total	233	24,890	2,074	27,984	66,746	1,022,465	7,735	32,663.84
	U.S.I.S.	48	3,658	1,588	5,286	6,516	411,037	5,054	16,437.16
	Other Public	1	-	-	-	22	33,658	35	63.00
Nebraska	Other Public	30	1,440	426	1,856	3,750	179,584	1,425	7,450.50
	Private	18	1,413	-	1,413	2,893	324,512	1,600	7,560.12
	Total	77	6,293	2,014	8,559	13,411	505,151	6,058	31,408.84
Ohio	Other Public	1	-	16	18	49	-	-	-
	Private	5	-	17	22	614	42	1	23.12
	Total	7	-	33	40	663	42	1	23.12
Wisconsin	U.S.I.S.	3	735	-	736	908	127,120	564	3,544.03
	Other Public	12	6,558	1,272	8,240	14,894	129,391	824	5,166.26
	Private	90	5,670	346	6,016	26,317	34,560	652	5,187.45
Totals	Total	113	13,963	1,556	15,040	42,709	595,071	3,039	13,877.86
	Other Public	12	6,558	1,272	8,240	14,894	129,391	824	5,166.26
	Private	90	5,670	346	6,016	26,317	34,560	652	5,187.45

Table 26. Summary of Initial and Re-plantation by State and Ownership, North Central Region, 1964.

State	Ownership Class	No. Acres	Acres W.F. Protected		Planted I	Total	Acres Marked	Number Pulled	6-Hour New-days	Total Costs
			Natural	Pl. Sites						
Illinois	Other Public	11	-	509	509	2,177	50,259	248	1,755.05	
	Private	19	-	238	238	2,228	59,414	166	1,059.02	
	Total	25	-	747	747	4,405	109,673	414	2,814.07	
Indiana	Other Public	4	-	372	372	2,804	13,509	164	843.64	
	Private	72	-	361	361	5,653	14,005	125	600.00	
	Total	76	-	733	733	8,457	27,514	289	1,443.64	
Iowa	Private	151	-	270	270	5,344	81,679	1,375	3,373.05	
	U.S.I.S.	17	347	1,106	1,453	4,222	153,014	1,041	5,533.59	
	Other Public	85	8,555	1,756	10,451	23,625	254,120	1,753	7,526.62	
Michigan	Private	442	24,976	2,352	27,328	59,692	1,558,349	10,221	44,105.66	
	Total	544	25,323	4,110	29,433	87,917	1,665,163	11,006	55,635.25	
Minnesota	U.S.I.S.	47	1,162	1,588	5,770	7,500	615,361	3,460	18,004.05	
	U.S.I.S.	1	-	-	-	22	33,658	35	61.00	
	Other Public	26	1,602	332	2,134	5,051	315,340	1,957	10,302.05	
Ohio	Private	21	1,430	65	1,495	3,162	34,657	1,685	7,956.32	
	Total	94	7,244	4,155	5,399	15,935	1,059,056	7,441	25,064.21	
Ohio	Other Public	5	-	597	597	2,684	12,193	400	2,600.00	
	Private	35	122	1,014	1,136	6,443	760	61	398.42	
	Total	44	122	1,607	1,729	9,127	12,953	461	2,998.42	
Mississippi	U.S.I.S.	3	736	-	736	548	127,180	503	1,544.05	
	Other Public	47	9,529	1,826	11,355	28,754	156,420	1,197	4,200.44	
	Private	153	7,158	763	7,921	37,332	78,073	840	5,153.50	
Mississippi Total	Total	203	17,423	4,589	22,012	67,574	261,673	2,540	15,897.99	
	Total	1,270	58,017	15,345	73,362	244,831	1,053,141	25,079	320,705.75	

Table 5. Summary of Local Conditions by Agency and Ownership, North Central Region, 1942.

Ownership Class	Agency	Acres W.F. Protected			Acres Harvested	Fiber Pulled	Total Mod-days Labor	Total Cash
		Acres	Set-aside	Planted				
D. B. V. D.	Y. B. Reg.	7	177	136	902	4,557	45	278.44
	State W.F.A.	23	576	274	2,195	251,155	889	3,271.66
	C. P. S.	4	-	370	1,157	15,904	170	511.72
	Sub-total	34	753	580	4,254	271,616	1,004	3,861.82
Mod-Hill, Pub.	Reg. Coop.	61	3,755	3,596	23,895	325,242	1,467	5,367.73
	State W.F.A.	28	680	364	3,701	199,675	674	3,997.16
	Sub-total	89	4,435	3,960	27,596	524,917	2,141	9,364.89
Private	Reg. Coop.	519	6,449	3,067	45,105	324,042	1,856	12,887.55
	State W.F.A.	523	5,367	635	25,950	574,572	3,978	16,826.13
	S. C. S.	2	-	5	104	198	12	16.00
	Sub-total	1,044	11,816	3,712	71,159	900,812	5,846	29,729.68
Total National		1,167	17,004	8,455	108,090	1,527,167	9,095	54,996.29

Table 3 (Contd.) Summary of Local Control by Agency and Ownership, North Central Region, 1964.

Ownership Class	Agency	Forest W.P. Protected			Acres Worked	Number		Total Man-days	Total Cost
		Area	Setback	Planted		Planted	Labor		
U. S. F. S.	F. S. Reg.	53	5,698	1,255	5,857	593,986	2,651	14,502.14	
	State W.P.A.	6	80	611	1,650	60,045	740	3,290.65	
	C. P. S.	1	-	30	130	119	8	33.20	
	Sub-Total	60	5,778	1,906	7,637	654,140	3,399	17,825.99	
Non-fed. Pub.	Reg. Corp.	40	11,605	2,503	26,136	270,047	2,116	13,709.41	
	State W.P.A.	40	3,788	1,120	12,273	227,336	1,662	7,595.90	
	Sub-Total	80	15,393	3,623	38,409	497,383	3,778	21,305.31	
Private	Reg. Corp.	200	7,886	1,086	37,581	53,754	1,051	7,281.13	
	State W.P.A.	259	14,024	266	41,024	1,134,181	7,576	53,113.55	
	Sub-Total	459	21,910	1,352	81,195	1,667,935	8,627	60,394.68	
	Total Regional	569	42,083	6,885	126,701	2,822,458	15,806	99,526.12	

Table 3 (Contd.) Summary of Local Control by Agency and Ownership, North Central Region, 1962.

Ownership Class	Agency	No. of Acres	Acres W.P. Protected		Acres Worked	Labor		Total Man-days	Total Cost
			Natural	Planted		Pulled	Other		
U. S. F. S.	F. S. Reg.	42	3,875	1,401	5,276	395,503		2,694	14,780.81
	State W.P.A.	17	554	885	1,539	351,209		1,629	6,402.22
	C. P. S.	5	-	108	108	18,623		178	354.59
	Sub-total	64	4,429	2,604	7,281	765,335		4,501	21,537.62
Non-Fed. Pub.	C. U. C.	4	746	-	746	186,718		1,002	3,605.01
	Reg. Corp.	121	15,358	6,104	21,462	415,289		3,583	24,276.58
	State W.P.A.	58	4,483	1,484	5,952	587,012		2,156	5,752.58
	Sub-total	183	19,823	7,588	27,411	1,008,301		5,139	34,665.18
Private	Reg. Corp.	719	14,335	4,153	18,488	417,796		2,907	19,863.08
	State W.P.A.	782	19,391	901	20,292	1,708,753		11,572	48,985.50
	S. C. S.	2	-	9	9	153		12	35.00
	Sub-total	1,503	33,726	5,063	38,789	2,126,699		14,491	68,883.58
Grand Total		2,150	58,078	19,855	74,163	3,976,343		25,643	126,992.79

Table 4. Results of checking after Vibes eradication, North Central Region, 1952

State	No. Areas	Acres	Acres Worked	Checking after Eradication				Classification of Worked Area in Vibes			
				Strip	Plots found	Pipes per Acre	Pipes per Acre	Pipes F.L.S. per Acre	0.0-1.5	1.5-2.0	2.0-2.5
				Acres	Strip	Acres	Acres	Acres	Acres	Acres	Acres
Illinois	5		1,742	25	353	332	5.9	14.0	1,322	430	-
Indiana	61		4,447	958	42	125	0.5	0.2	4,354	53	-
Michigan	545		127,539	2,455	4,216	6,821	1.7	2.3	121,352	6,443	244
Minnesota	70		11,819	213	644	1,465	2.9	6.9	11,089	596	-
Ohio	51		3,091	54	152	708	2.0	7.5	3,091	-	-
Wisconsin	72		30,036	372	567	1,462	1.5	3.5	28,732	1,353	171
Totals											
	907		178,571	5,000	5,415	10,914	1.3	2.9	140,770	8,879	415

Table 5. Footstocking in 1942 of Areas Previously Worked, North Central Region

State	No. Areas	Total Eradicated			Discharged			Work necessary			On hand			Costs
		Acres	White	Pine	Acres	White	Pine	Acres	White	Pine	Acres	White	Pine	
Illinois	5	366			1,429	22		153						
Michigan	187	21,898			66,687	2,670		10,032			1,236			
Wisconsin	168	12,795			52,657	1,913		9,834			56,855			440
Totals														
	240	24,060			120,773	4,605		20,019			106,911			440

Table 6. Status of Control by States, North Central Region, as December 31, 1912

State	Total Control Problem, Acres				Not Acres Initially Planted				Initially Worked				Acres on			
	Total				Total				Total				Total			
	Naturals	White	Pine	Total	Naturals	White	Pine	Total	Naturals	White	Pine	Total	Naturals	White	Pine	Total
Illinois	233	5,091		5,324	233	2,237		2,470	10,734	334		11,068	350			350
Indiana	351	6,658		7,009	351	5,443		5,794	12,405	1,449		13,854	2,204			2,204
Iowa	533	11,667		12,200	533	2,346		2,879	34,471	2,859		37,330	634			634
Michigan	325,102	11,352		336,454	325,102	76,509		401,611	1,113,303	69,031		1,182,334	173,067			173,067
Minnesota	127,362	28,250		155,612	127,362	15,869		143,231	376,587	127,902		504,489	30,815			30,815
Ohio	3,235	30,533		33,768	3,235	10,754		13,989	181,117	19,960		201,077	2,965			2,965
Wisconsin	153,447	17,222		170,669	153,447	32,745		186,192	524,210	118,350		642,560	22,542			22,542
Total	1,506,924	1,172,127		2,679,051	1,506,924	446,663		1,953,587	2,732,358	441,334		3,173,692	134,658			3,308,350

Table 1. Status of Control by States and Ownership Classes, 1940, Control Factors, December 31, 1940

Ownership Class	Total Control Planted		Total Control Problem		Control Acres		Set Acres Initially Worked		Initially Worked		Acres Not Initially Worked		Acres Not Initially Worked	
	Natural	White	N. P. A.	W. P. A.	Control	Area	Natural	White	Control	Area	White	Control	White	Control
	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants	Plants
Other Pub.	120	2,553	2,773	2,773	10,760	10,760	10,760	2,479	2,479	9,450	85	3,100	110	310
Private	44	728	772	772	15,051	15,051	15,051	678	678	7,074	609	12,876	12	12
Total	164	3,281	3,545	3,545	25,811	25,811	25,811	3,157	3,157	16,524	1464	25,976	122	322
Other Pub.	59	1,925	2,024	2,024	17,097	17,097	17,097	1,018	1,018	16,178	111	1,119	119	1,119
Private	292	4,931	5,225	5,225	111,556	111,556	111,556	2,525	2,525	55,928	2,303	55,680	1,866	20,707
Total	351	6,856	7,249	7,249	128,653	128,653	128,653	3,543	3,543	72,106	2,414	57,899	2,085	21,826
U. S. I. S.	10	10	10	10	206	206	206	10	10	206	10	206	10	206
Other Pub.	199	96	285	285	2,215	2,215	2,215	59	59	1,575	59	710	1	1
Private	244	1,361	1,705	1,705	57,519	57,519	57,519	2,277	2,277	55,730	2,199	24,617	671	10,196
Total	443	1,467	1,990	1,990	60,000	60,000	60,000	2,336	2,336	56,471	2,208	25,325	682	10,392
U. S. P. S.	19,125	32,354	52,039	52,039	110,741	110,741	110,741	11,866	11,866	126,366	4,636	13,775	21,838	65,449
U. S. P. S.	244	200	504	504	5,580	5,580	5,580	186	186	3,514	36	70	44	44
Other Pub.	107,045	10,357	115,445	115,445	340,648	340,648	340,648	35,287	35,287	307,415	13,051	31,233	11,165	97,237
Private	123,545	9,501	218,146	218,146	860,354	860,354	860,354	8,250	8,250	683,903	51,328	178,115	27,044	55,077
Total	365,409	61,858	846,130	846,130	1,911,727	1,911,727	1,911,727	76,593	76,593	1,130,801	69,031	225,824	93,107	257,610

Table C. Summary of Rabbits Local Control by States, from January 1, 1941, to December 31, 1942.
 State General Report.

State	Period of Time	Area No. P. 2. Protected	Cross Acres Worked	Number Rabbits Killed	3-hour Labor and Supervision	Average per Acre Worked	Days Killed	% Killed per Acre
Illinois	1941-1942	3,087	13,111	1,553,170	4,579	0.33	110	195
	1942	101	2,062	54,107	106	0.05	26	561
	Total	3,188	15,173	1,607,277	4,685	0.30	106	198
Indiana	1941-1942	5,142	66,505	357,720	3,509	0.05	5	102
	1942	370	6,387	15,297	145	0.02	3	110
	Total	5,512	72,892	373,017	3,654	0.05	5	102
Iowa	1941-1942	2,809	32,966	3,139,051	23,103	0.70	95	136
	1942	200	2,505	66,066	1,112	0.16	26	50
	Total	3,009	35,471	3,205,117	24,215	0.69	90	132
Michigan	1941-1942	339,643	1,151,661	63,144,070	266,128	0.23	55	237
	1942	35,248	60,753	912,018	5,260	0.08	15	173
	Total	374,891	1,212,414	64,056,088	271,388	0.22	53	236
Minnesota	1941-1942	157,785	395,230	58,160,891	145,211	0.37	117	398
	1942	841	2,624	349,865	1,043	0.10	133	135
	Total	158,626	397,854	58,510,756	146,254	0.37	117	397
Ohio	1941-1942	12,156	180,312	2,459,781	31,571	0.17	14	78
	1942	1,884	7,854	12,352	451	0.06	3	28
	Total	14,040	188,166	2,472,133	32,022	0.17	13	77
Wisconsin	1941-1942	273,104	963,700	11,273,826	341,553	0.16	67	215
	1942	7,032	24,275	76,512	716	0.03	3	107
	Total	280,136	987,975	11,350,338	342,269	0.16	66	213

Table 6. (Cont'd.) Summary of Initial Local Control by States, from Inception to December 31, 1962
South Central Region.

State	Period of Time	Acre W.F., and W.F., P., S. Protected	Gross Acres Revised	Water Albas Pooled	Below Bar-days Labor and Supervision	Average per Acre: Watered	Albas per Acre per Dec- 31
Kansas	1947-1961 1962	646,366 25,661	2,307,000 306,090	243,051,244 1,537,697	618,056 8,889	0.23 0.08	280 371
Total		671,987	2,613,090	243,051,244	626,945	0.23	280

a - Acres were reduced by eliminating cultivated fields.

Table 6a. Summary of Re-irrigation by States from Inception to December 31, 1965,
North Central Region.

State	Period of Time	Acre W.F., and W.F., P., S. Protected	Gross Acres Revised	Water Albas Pooled	Below Bar-days Labor and Supervision	Average per Acre: Watered	Albas per Acre per Dec- 31
Illinois	1938-1961 1962	- 644	7,264 9,763	694,909 57,066	2,526 906	0.15 0.13	67 24
Total		644	9,826	694,909	3,432	0.15	67
Indiana	1932-1961 Total	1,537 283	6,016 2,079	62,712 11,767	919 744	0.10 0.07	7 6
Total		2,080	8,000	71,479	4,176	0.13	70
Ohio	1938-1961 Total	494 73	2,144 2,036	229,096 15,144	1,840 273	0.45 0.04	106 15
Total		567	4,076	244,240	5,000	0.17	10

Table 6a. (Contd.) Summary of Irradiation by States from December 31, 1942,
North Central Section.

State	Period of Time	Area N. S. and P. S. Protected	Gross Acres Worked	Number Piles Piled	8-Hour Non-days Labor and Supervision	Average per Acre Worked Days	Acres Piled per 8-Hour day
Michigan	1932-1941	73,080	300,698	5,871,258	55,875	0.17	29
	1942	21,984	66,746	1,032,465	7,735	0.11	15
	Total	95,064	367,444	6,903,723	63,610	0.14	36
Minnesota	1934-1941	40,754	50,052	5,323,040	26,649	0.30	65
	1942	6,577	13,411	949,191	6,098	0.16	75
	Total	47,331	63,463	6,272,231	32,747	0.32	80
Ohio	1936-1941	4,705	53,213	819,462	10,172	0.31	25
	1942	55	663	41	4	0.01	1
	Total	4,760	53,876	819,503	10,176	0.30	26
Wisconsin	1934-1941	57,377	197,473	5,559,855	63,356	0.21	29
	1942	19,020	62,759	255,073	2,281	0.05	7
	Total	76,397	260,232	5,814,928	65,637	0.18	26
Region	1932-1941	173,751	545,648	19,031,155	119,317	0.22	16
	1942	18,701	128,791	2,310,444	16,804	0.13	19
	Region Total	192,452	674,439	21,341,599	136,121	0.20	18

Table 85. Summary of Local Control, Initial and Re-education, by States, from Inception to December 31, 1942.

State	Period of Time	Local N. P. and N. P. P. 2. Protected	Grass Joints Inland	Subgr Rites Pullad	6-Mon Mat-days Labor and Supervision	Average per Local Worked	Per Sub-Per Mat-
Illinois	1932-1942	3,087 767	30,874 6,405	2,182,772 109,573	6,505 444	0.24 0.09	36 365
	Total	3,087 767	30,874 6,405	2,182,772 109,573	6,505 444	0.24 0.09	36 365
	1933-1942	1,315	12,775	820,442 27,576	1,319	0.24	36
Indiana	1933-1942	7,375 793	75,321 8,457	420,442 27,576	4,428 299	0.06 0.07	5 57
	Total	7,375 793	75,321 8,457	420,442 27,576	4,428 299	0.06 0.07	5 57
	1933-1942	6,122	61,773	400,400	4,177	0.06	5
Iowa	1933-1942	5,262 270	55,059 5,341	3,764,557 81,409	34,967 1,773	0.71 0.13	139 13
	Total	5,262 270	55,059 5,341	3,764,557 81,409	34,967 1,773	0.71 0.13	139 13
	1933-1942	3,153	36,403	3,403,355	28,280	0.24	137
Minnesota	1933-1942	1,42,113 39,232	1,455,259 127,625	69,015,328 1,565,404	102,301 13,015	0.22 0.10	54 15
	Total	1,42,113 39,232	1,455,259 127,625	69,015,328 1,565,404	102,301 13,015	0.22 0.10	54 15
	1933-1942	30,846	308,407	10,040,811	115,114	0.21	14
Mississippi	1933-1942	150,539 9,399	403,282 15,935	69,983,931 1,299,056	172,860 7,141	0.26 0.15	152 82
	Total	150,539 9,399	403,282 15,935	69,983,931 1,299,056	172,860 7,141	0.26 0.15	152 82
	1933-1942	27,936	901,417	3,700,200	100,001	0.26	140
Ohio	1933-1942	16,085 1,129	234,045 8,127	3,279,245 12,934	41,743 651	0.19 0.05	74 28
	Total	16,085 1,129	234,045 8,127	3,279,245 12,934	41,743 651	0.19 0.05	74 28
	1933-1942	14,150	224,117	3,058,110	34,294	0.19	72

Table Bn. (Contd.) Summary of Local Control, Initial and Re-application, by States, from Inception to December 31, 1942, North Central Region.

State	Period of Time	Acres		Gross Acres Worked	Number Poles Pilled	3-Four Man-days Labor and Supervision	Average per acre		Lr. 2000
		W.F. and W. P. P. S. Protected	W.F. and W. P. P. S. Acres Worked				Man-days	Poles	
Wisconsin	1919-1941	333,271	1,157,173	89,875,681	385,209	0.53	78	235	
	1942	22,052	67,074	361,613	3,000	0.04	5	121	
	Total	355,323	1,224,247	90,237,294	388,209	0.52	74	232	
Region	1917-1941	1,025,117	3,412,653	232,122,946	938,573	0.25	67	247	
	1942	74,162	234,881	3,058,141	25,693	0.11	16	190	
	Total	1,099,279	3,647,534	235,181,087	964,266	0.27	66	235	

Table 9. Summary of Nursery Sanitation Work Performed in the North Central Region, 1947.

Ownership Class	Agency Performing Work	Number of Nurseries	Value of Trees to Nursery	Acreage Protected	Acreage Worked	Ribes Pulled O. S. C.	Wild	Costs	
								Man-days	Amount
State Private	Regular	1	350,000	80	575	-	8	4	29.25
	Regular & Private	5	17,000	51	1,235	122	53	25	244.70
	Total	6	367,000	131	1,810	122	61	29	273.95
State Private	Regular	2	554,000	-	-	-	-	-	-
	Regular & State	3	46,500	-	-	-	-	4	-
	Total	5	600,500	-	-	-	-	4	-
State U. S. F. S.	State-S. Y. A.	1	1,589,700	335	1,037	-	3,350	23	93.65
	S. S. P. Q. M. S.	1	50,000	60	475	-	134	1	5.15
	Total	2	1,639,700	395	1,512	-	3,484	24	98.80
State	Wisconsin	2	3,100,000	22	377	-	23,112	75	252.43
	Region	1	50,000	60	455	-	134	1	9.35
	Total	3	3,150,000	82	832	-	24,246	76	261.78
State Private	Regular	1	50,000	60	455	-	134	1	9.35
	Regular & State	5	6,053,300	437	1,969	122	24,110	105	377.65
	Total	6	6,103,300	497	2,424	122	24,244	106	387.00
State Private	Regular	1	50,000	60	455	-	134	1	9.35
	Regular & State	5	6,053,300	437	1,969	122	24,110	105	377.65
	Total	6	6,103,300	497	2,424	122	24,244	106	387.00

Table 10. Cultivated Black Current Rehabilitation, North Central Region, 1942.

State	Number Counties Where Work was done	Total Number Inspections	Found		Destroyed Locations	Bushes	Number 5-Year Old Trees	Total Cost
			Locations	Bushes				
Iowa	27	21,425	17	80	81	355	613	2,000.00
Michigan	6	14,716	131	617	137	823	1,220	2,161.75
Ohio	21	101	"	312	92	171	"	"
Total	54	36,242	148	1,209	310	1,349	1,833	4,161.75
Iowa	10	6,644	24	189	24	103	292	1,221.05
Michigan	14	63,742	153	757	198	777	3,409	15,721.00
Wisconsin	1	1,118	2	3	2	3	9	107.10
Total	25	69,404	279	849	224	883	1,710	17,049.15
Grand Total	79	105,646	427	2,058	534	2,232	4,543	21,211.90

Table 10a. Analysis of Cultivated Black Current Rehabilitation, North Central Region, 1942.

State	Initial Survey		Found on Rehabilitation, 1942		Planted Orig.		Planted Since		Total to Date		Percent Total Found	
	Locations	Bushes	Locations	Bushes	Locations	Bushes	Locations	Bushes	Locations	Bushes	Locations	Bushes
Iowa	182	2,611	22	97	2	2	2	2	24	59	5	59
Wisconsin	60	357	2	3	2	2	2	2	2	2	2	2
Total	242	2,968	24	100	4	4	4	4	26	61	7	61

Table 11. Cumulative Cultivated Black Current Elimination,
North Central Region, to December 31, 1962.

State	Total		Destroyed	
	Locations	Bushes	Location	Bushes
Illinois	532	4,171	60	504
Indiana	1	-	-	-
Iowa	1,574	7,164	1,511	6,891
Kentucky	14,525	144,354	14,859	143,700
Kansas	8,260	23,304	5,260	23,306
Ohio	9,837	75,352	8,354	72,697
Missouri	6,601	57,050	6,597	37,051
Total	55,724	291,627	54,412	294,102

Table 12. Total North Central Region Expenditures, Including Miscellaneous Office,
Classified According to State and Activity, 1942.

Code	Activity	Illinois	Indiana	Iowa	Michigan
A	Supervision	42,174.75	894.75	11,982.26	122,111.19
B	Ribes Eradication	1,388.58	1,092.64	5,469.45	45,987.20
C	Ribes Eradication Assistants	1,477.75	351.00	2,658.90	5,579.77
D	Cultivated Black Currant Elimination	-	-	1,913.87	17,056.71
E	Nursery Sanitation	273.97	-	-	-
F	Value of Cultivated Ribes Destroyed	-	-	292.30	3,429.25
G	Canker Elimination	-	-	-	5,200.55
Ha	Pre-eradication Survey	431.76	-	2,191.36	2,682.14
Hb	Checking and Other Field Data	1,288.14	84.65	159.31	2,000.34
Total		9,034.62	2,445.04	18,697.45	109,095.75
Percent of Total		0.3	0.3	6.3	10.2

Table 12. (Contd.)

Code	Activity	Minnesota	Ohio	Wisconsin	Total	% Total
A	Supervision	120,850.51	13,254.02	121,648.20	182,115.18	30.2
B	Ribes Eradication	29,456.50	2,097.18	10,622.13	96,315.37	35.5
C	Ribes Eradication Assistants	6,756.77	1,101.24	7,507.19	29,811.62	11.0
D	Cultivated Black Currant Elimination	106.72	-	10.00	21,914.90	8.0
E	Nursery Sanitation	404.44	-	253.41	951.82	0.3
F	Value of Cultivated Ribes Destroyed	71.00	-	1,650.90	4,261.05	1.5
G	Canker Elimination	543.20	-	-	5,744.15	2.1
Ha	Pre-eradication Survey	9,753.30	26.36	619.00	15,803.72	5.0
Hb	Checking and Other Field Data	3,880.22	227.73	7,039.95	11,680.04	5.5
Total		21,853.06	11,705.53	18,789.03	71,415.21	100.0
Percent of Total		26.4	6.3	16.3	100.0	

Table 12c. Summary of Expenditures by Agencies and Activities, North Central Region, Calendar Year 1962

Agency	A Supervision and R.P.A., Agent Activities	B Local Control	C Local Control Supervision	D C.E.C. Elimination	E Housing Sanitation
State and Private	110,765.24	112,582.95	10,724.44	899.61	172.12
Bureau Regular (5101)	50,745.39	251.13	1,627.97	15.88	
Regular Group (5103)		15,007.46	6,680.81		104.86
Forest Service Regular (5104)		10,119.01	2,332.21		
Sub-total Regular	50,745.39	37,677.61	10,657.98	15.88	104.86
Bureau W.P.A.	106.13			104.82	
State W.P.A.	10,024.57	52,132.17	10,362.26	21,134.09	75.05
H. Y. A.	107.85				
C. P. S.		259.50			
Collective Services		28.61	2.76		
Sub-total W.P.A., etc.	12,479.19	54,600.26	10,273.04	21,238.11	95.05
I.S.-C.C.O.	128.50	1,487.57	117.46		
C.C.-C.C.O.		36.00			
Total C.C.O.	128.50	1,523.57	117.46		
Total Total	65,116.13	94,513.83	29,811.82	21,974.50	511.63

Police Dept. (Contd.) Summary of Expenditures by Agencies and Activities, North Central Region,
Calendar Year 1942.

Agency	Outfitted Rifles	Banker Payroll	Pre-emption Survey	Checking and Other Field Data	Total
State and Private	4,300.09	-	4,720.41	45,022.96	134,123.46
Bureau Regular (3101)	-	8.60	297.53	3,253.09	36,851.33
Regular-Occ. (3102)	-	-	-	-	21,792.57
Forest Service Regular (3104)	-	-	657.63	1,015.14	16,155.15
Sub-total Regular	-	8.60	955.01	4,268.23	54,859.07
Bureau N.P.A.	-	-	101.51	-	101.51
State N.P.A.	-	3,755.55	24,165.99	4,323.99	32,581.03
N. Y. A.	-	-	-	-	467.85
C. P. A.	-	-	-	-	25.00
Relative Service	-	-	-	-	12.31
Sub-total N.P.A., etc.	-	5,155.55	24,270.50	4,323.99	120,095.81
S.C.S.-C.C.C.	-	-	-	-	1,394.53
Sub-total S.C.C.	-	-	-	-	1,394.53
Grand Total	4,361.09	5,164.15	25,705.72	14,680.04	271,479.51

TABLE 12b. (CONTINUED) TABLE 12b (1)

SUMMARY OF EXPENDITURES FOR 1942 INCLUDING MINOR OFFICE COSTS INCURRED TO STATES

State	Total		Expenditure of Federal Funds									
	Federal (All Agencies: Including State WPA Projects)	State (Including all Coop. Funds)	Total		Regular Funds							
			Grand Total		Bureau Entomology & Plant Quarantine	Landship & Coord. (5101)	Less Act (3103)	Forest Services Regular Funds (3101)	Total Regular	State W.P.A.	U.C.C. and S.C.B.	Total Emergency Funds
Illinois	13,705.79	15,328.56	29,034.35		12,135.58		11,569.11		43,705.79	-	-	
Indiana	974.54	1,470.50	2,445.04		602.52		372.02		974.54	-	-	
Iowa	15,675.15	2,982.70	18,657.85		2,124.23		2,718.65		4,842.88	10,832.27	-	10,832.27
Michigan	94,237.16	14,848.99	109,086.15		14,535.65		5,409.01		19,944.66	74,141.50	-	74,141.50
Minnesota	63,861.57	7,919.49	71,781.06		14,061.21		8,445.65		22,506.86	39,274.11	189.50	30,696.41
Ohio	7,740.03	3,526.50	11,266.53		5,992.58		1,715.99		7,708.57	31,145	36.00	31,181.57
Wisconsin	32,070.49	16,658.54	48,729.03		16,950.40		7,557.49		24,507.89	4,018.45	3,544.03	7,562.92
TOTAL	238,204.73	35,174.74	273,379.47		56,851.55		21,793.92		98,645.50	120,035.61	1,769.53	121,805.14

TABLE 12c. (Continued) TABLE # 6A (SEE PAGE 12)

SUMMARY OF ALL EXPENDITURES, 1919-1922 (Inclusive)
INCLUDING MINNESOTA OFFICE COSTS PROMISED TO STATES

RECAPITULATION OF EMERGENCY FUNDS

State	FEDERAL W.P.A.				C. O. C.	
	Bureau	Forest Service	Department Interior	Total	State WPA (All Bureau): Forest Service	Department Interior
Illinois	122,930.30	-	-	122,930.30	-	43,962.86
Indiana	15,473.62	-	-	15,473.62	-	-
Iowa	127,901.67	-	-	127,901.67	13,612.99	-
Michigan	769,231.63	47,747.62	11,832.99	779,812.24	13,551.28	1,557.20
Minnesota	631,677.43	1,513.84	-	633,191.27	292,713.73	8,970.69
Ohio	102,430.99	-	-	102,430.99	126,142.27	81,532.99
Wisconsin	779,095.52	8,757.45	-	787,852.97	33,819.51	-
TOTAL	2,455,731.14	10,065.91	1,632.99	2,467,429.04	512,187.92	187,199.62
					969,979.94	1,136,603.10

Table 12c. (Contd.)

State	U. S. N. A.				Grand Total	
	Bureau	Forest Service	UWA, APA, SRA, WPA, C. O. C. Jumps	Total	UWA, APA, SRA, WPA, C. O. C. Jumps	Grand Total
Illinois	42,306.32	-	4771.33	47,077.65	-	47,077.65
Indiana	1,039.75	-	-	1,039.75	-	1,039.75
Iowa	12,971.11	-	1,650.23	14,621.34	-	14,621.34
Michigan	72,161.63	47,184.10	33,711.86	153,057.59	-	153,057.59
Minnesota	67,900.24	6,181.97	2,280.34	76,362.55	-	76,362.55
Ohio	19,195.05	-	5,093.35	24,288.40	-	24,288.40
Wisconsin	57,108.12	1,016.16	72,952.77	131,077.05	-	131,077.05
TOTAL	233,676.50	54,386.23	119,671.96	407,734.69	119,671.96	527,406.65

Table 13. Cumulative and Cumulative Summary of Cattle Feedings,
North Central Region, to December 31, 1942

State	Period of Time	Under Trees	Under Fences	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees
Wisconsin	Cumulative 1942	1,351,865	26,164	60	60	60	60	60	60
		217,180	11,991	221	221	221	221	221	221
	Total	701,648	30,177	181	181	181	181	181	181
Minnesota	Cumulative 1942	219,152	2,160	15	15	15	15	15	15
		7,500	524	15	15	15	15	15	15
	Total	226,652	8,704	30	30	30	30	30	30
Ohio	Cumulative	300	11	7	7	7	7	7	7
Region Total		968,997	65,872	1,008	1,008	1,008	1,008	1,008	1,008

Table 14. Cumulative Summary of Control Area Boundary Markings,
North Central Region, to December 31, 1942

State	Period of Time	Under Trees	Under Fences	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees	Under Fruit Trees
Wisconsin	Cumulative	1,351,865	26,164	60	60	60	60	60	60
Minnesota	Cumulative	219,152	2,160	15	15	15	15	15	15
		7,500	524	15	15	15	15	15	15
Ohio	Cumulative	300	11	7	7	7	7	7	7
Region Total		968,997	65,872	1,008	1,008	1,008	1,008	1,008	1,008

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Agency	Number of People by Month												Average per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Stable	-	-	-	-	-	1	2	1	2	2	2	2	1.4
Regular-Comp.	-	-	-	-	-	-	-	1	7	7	5	-	1.5
Total	-	-	-	-	-	1	2	2	9	9	7	-	1.2
Regular-Comp.	-	-	-	-	-	1	2	1	2	2	2	-	0.2
Stable W. P. A.	-	-	-	-	-	1	2	1	2	2	2	-	0.8
Total	-	-	-	-	-	2	4	2	4	4	4	-	1.2
Regular	1	-	-	-	-	1	1	1	1	1	1	1	0.2
Regular-Comp.	-	-	-	-	-	1	5	1	2	2	1	1	1.2
Stable W. P. A.	15	15	25	26	26	26	19	-	1	1	1	1	15.4
Stable W. P. A.	1	1	-	-	-	-	-	-	-	-	-	-	0.2
Total	17	16	26	27	27	27	26	1	4	4	3	2	17.0
Regular	1	-	-	-	-	1	1	1	1	1	1	1	0.2
Regular-Comp.	-	-	-	-	-	1	5	1	2	2	1	1	1.2
Stable W. P. A.	15	15	25	26	26	26	19	-	1	1	1	1	15.4
Stable W. P. A.	1	1	-	-	-	-	-	-	-	-	-	-	0.2
Total	17	16	26	27	27	27	26	1	4	4	3	2	17.0
Regular	1	-	-	-	-	1	1	1	1	1	1	1	0.2
Regular-Comp.	-	-	-	-	-	1	5	1	2	2	1	1	1.2
Stable W. P. A.	15	15	25	26	26	26	19	-	1	1	1	1	15.4
Stable W. P. A.	1	1	-	-	-	-	-	-	-	-	-	-	0.2
Total	17	16	26	27	27	27	26	1	4	4	3	2	17.0

Table 15. (Contd.) Approximate Number of People Employed in the North Central Region, by Month and Agency, 1942.

Agency	Number of People by Month												Average per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Regular													
Regular-Coop.													
Regular-Gr. S.													
State													
State-Gr. P. A.													
I. B. C. C. C.													
Total	10	12	13	10	10	177	307	111	30	39	19	13	37.9
Regular													
Regular-Coop.													
W. T. A.													
U. S. Navy													
Total	3	3	2	2	2	34	3	3	6	2	3	2	3.2
Regular													
Regular-Coop.													
State													
I. B. C. C. C.													
I. T. A.													
State-Gr. P. A.													
Total	9	20	10	10	24	71	28	109	20	19	1	4	14.7

Table 15. (Contd.) Approximate Number of People Employed in the North Central Region, by Month and Agency, 1942.

Agency	Number of People by Month												Average per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Regular State-W. P. A.	9	8	8	7	8	8	7	7	7	7	8	8	7.7
W. T. A.	-	2	2	2	1	1	1	1	1	1	-	-	1.0
Total	9	10	11	10	9	9	8	8	8	8	8	8	8.8
Regular Regular-Coop.	23	20	19	18	18	21	16	15	15	19	21	20	18.7
Regular State	-	-	-	5	5	5	4	3	3	2	3	-	3.8
State-W. P. A.	11	11	11	9	9	10	10	10	10	10	9	7	10.9
W. T. A.	1	1	1	1	1	1	1	1	1	1	1	1	1.0
U. P. A.	-	-	-	-	-	-	-	-	-	-	-	-	-
I. S. C. U. C.	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S. C. U. C.	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	43	40	39	33	33	42	36	35	35	40	39	27	38.2

CONTINUE TABLE #1, SHEET #1
 CONTINUED OF 1944- PINE PRODUCTION

State	Initial Production Work			Reproduction Work			Totals		
	Acreage Worked	Number Mill and Cuts	Subvent 5-6000 Min-Days	Acreage Worked	Number Mill and Cuts	Subvent 5-6000 Min-Days	Acreage Worked	Number Mill and Cuts	Subvent 5-6000 Min-Days
Alabama	2,042	50,107	106	2,363	55,566	300	6,405	101,673	1,100
Arizona	6,387	16,307	145	2,070	11,767	104	6,457	27,074	5
Ark.	1,505	60,000	1,102	591	15,345	231	3,304	81,105	1,107
California	60,705	900,016	5,000	66,710	1,003,465	7,035	127,539	1,095,103	23,003
Colorado	2,100	509,805	1,100	13,301	949,402	6,090	15,909	1,209,056	10
Idaho	7,100	18,900	657	600	44	4	8,107	12,903	5
Washington	10,075	70,500	710	10,700	105,071	2,100	17,074	201,625	1,070

Notes: 1. Subvent means: $\frac{\text{hours worked per day} \times \text{number men}}{2}$

ANNISSE TROUT #1 TROUT JR.
SUMMARY OF 1912 RIVER MAINTENANCE

Date	Work per Day		Days per Week		Number of Days		Number of Employees		Total
	Initial Work Time	Initial Work Time	Initial Work Time	Initial Work Time	Days	Weeks	Days	Weeks	
1912	25.5	23.5	0.05	0.05	1	1	1	1	1
1913	25.5	23.5	0.05	0.05	1	1	1	1	1
1914	25.5	23.5	0.05	0.05	1	1	1	1	1
1915	25.5	23.5	0.05	0.05	1	1	1	1	1
1916	25.5	23.5	0.05	0.05	1	1	1	1	1
1917	25.5	23.5	0.05	0.05	1	1	1	1	1
1918	25.5	23.5	0.05	0.05	1	1	1	1	1
1919	25.5	23.5	0.05	0.05	1	1	1	1	1
1920	25.5	23.5	0.05	0.05	1	1	1	1	1
1921	25.5	23.5	0.05	0.05	1	1	1	1	1
1922	25.5	23.5	0.05	0.05	1	1	1	1	1
1923	25.5	23.5	0.05	0.05	1	1	1	1	1
1924	25.5	23.5	0.05	0.05	1	1	1	1	1
1925	25.5	23.5	0.05	0.05	1	1	1	1	1
1926	25.5	23.5	0.05	0.05	1	1	1	1	1
1927	25.5	23.5	0.05	0.05	1	1	1	1	1
1928	25.5	23.5	0.05	0.05	1	1	1	1	1
1929	25.5	23.5	0.05	0.05	1	1	1	1	1
1930	25.5	23.5	0.05	0.05	1	1	1	1	1
1931	25.5	23.5	0.05	0.05	1	1	1	1	1
1932	25.5	23.5	0.05	0.05	1	1	1	1	1
1933	25.5	23.5	0.05	0.05	1	1	1	1	1
1934	25.5	23.5	0.05	0.05	1	1	1	1	1
1935	25.5	23.5	0.05	0.05	1	1	1	1	1
1936	25.5	23.5	0.05	0.05	1	1	1	1	1
1937	25.5	23.5	0.05	0.05	1	1	1	1	1
1938	25.5	23.5	0.05	0.05	1	1	1	1	1
1939	25.5	23.5	0.05	0.05	1	1	1	1	1
1940	25.5	23.5	0.05	0.05	1	1	1	1	1
1941	25.5	23.5	0.05	0.05	1	1	1	1	1
1942	25.5	23.5	0.05	0.05	1	1	1	1	1
1943	25.5	23.5	0.05	0.05	1	1	1	1	1
1944	25.5	23.5	0.05	0.05	1	1	1	1	1
1945	25.5	23.5	0.05	0.05	1	1	1	1	1
1946	25.5	23.5	0.05	0.05	1	1	1	1	1
1947	25.5	23.5	0.05	0.05	1	1	1	1	1
1948	25.5	23.5	0.05	0.05	1	1	1	1	1
1949	25.5	23.5	0.05	0.05	1	1	1	1	1
1950	25.5	23.5	0.05	0.05	1	1	1	1	1
1951	25.5	23.5	0.05	0.05	1	1	1	1	1
1952	25.5	23.5	0.05	0.05	1	1	1	1	1
1953	25.5	23.5	0.05	0.05	1	1	1	1	1
1954	25.5	23.5	0.05	0.05	1	1	1	1	1
1955	25.5	23.5	0.05	0.05	1	1	1	1	1
1956	25.5	23.5	0.05	0.05	1	1	1	1	1
1957	25.5	23.5	0.05	0.05	1	1	1	1	1
1958	25.5	23.5	0.05	0.05	1	1	1	1	1
1959	25.5	23.5	0.05	0.05	1	1	1	1	1
1960	25.5	23.5	0.05	0.05	1	1	1	1	1
1961	25.5	23.5	0.05	0.05	1	1	1	1	1
1962	25.5	23.5	0.05	0.05	1	1	1	1	1
1963	25.5	23.5	0.05	0.05	1	1	1	1	1
1964	25.5	23.5	0.05	0.05	1	1	1	1	1
1965	25.5	23.5	0.05	0.05	1	1	1	1	1
1966	25.5	23.5	0.05	0.05	1	1	1	1	1
1967	25.5	23.5	0.05	0.05	1	1	1	1	1
1968	25.5	23.5	0.05	0.05	1	1	1	1	1
1969	25.5	23.5	0.05	0.05	1	1	1	1	1
1970	25.5	23.5	0.05	0.05	1	1	1	1	1
1971	25.5	23.5	0.05	0.05	1	1	1	1	1
1972	25.5	23.5	0.05	0.05	1	1	1	1	1
1973	25.5	23.5	0.05	0.05	1	1	1	1	1
1974	25.5	23.5	0.05	0.05	1	1	1	1	1
1975	25.5	23.5	0.05	0.05	1	1	1	1	1
1976	25.5	23.5	0.05	0.05	1	1	1	1	1
1977	25.5	23.5	0.05	0.05	1	1	1	1	1
1978	25.5	23.5	0.05	0.05	1	1	1	1	1
1979	25.5	23.5	0.05	0.05	1	1	1	1	1
1980	25.5	23.5	0.05	0.05	1	1	1	1	1
1981	25.5	23.5	0.05	0.05	1	1	1	1	1
1982	25.5	23.5	0.05	0.05	1	1	1	1	1
1983	25.5	23.5	0.05	0.05	1	1	1	1	1
1984	25.5	23.5	0.05	0.05	1	1	1	1	1
1985	25.5	23.5	0.05	0.05	1	1	1	1	1
1986	25.5	23.5	0.05	0.05	1	1	1	1	1
1987	25.5	23.5	0.05	0.05	1	1	1	1	1
1988	25.5	23.5	0.05	0.05	1	1	1	1	1
1989	25.5	23.5	0.05	0.05	1	1	1	1	1
1990	25.5	23.5	0.05	0.05	1	1	1	1	1
1991	25.5	23.5	0.05	0.05	1	1	1	1	1
1992	25.5	23.5	0.05	0.05	1	1	1	1	1
1993	25.5	23.5	0.05	0.05	1	1	1	1	1
1994	25.5	23.5	0.05	0.05	1	1	1	1	1
1995	25.5	23.5	0.05	0.05	1	1	1	1	1
1996	25.5	23.5	0.05	0.05	1	1	1	1	1
1997	25.5	23.5	0.05	0.05	1	1	1	1	1
1998	25.5	23.5	0.05	0.05	1	1	1	1	1
1999	25.5	23.5	0.05	0.05	1	1	1	1	1
2000	25.5	23.5	0.05	0.05	1	1	1	1	1

Before the summer number of persons on the payroll at the peak of the season.
Total number persons employed is not desired because the large turnover in T.P.A. men would result in a misinterpreted figure.

OMNIBUS TABLE #2 SHEET #1

SUMMARY OF 1962 HIBES ERADICATION - BY PROGRAM (Including all work - initial and reeradication)

State	Regular and Cooperative*				W.P.A. (State)				U.S.D.A. and S.D.A.	
	Acreage Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Average Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	Average Worked	Number Wild and Cult. Ribes Destroyed	Number 8-Hour Man-Days	
Illinois	4,105	109,673	144	-	-	-	-	-	-	-
Indiana	8,157	27,974	389	-	-	-	-	-	-	-
Iowa	974	17,347	430	2,370	64,022	363	-	-	-	-
Michigan	17,724	377,944	2,125	79,815	1,547,539	10,930	-	-	-	-
Minnesota	7,774	469,985	3,629	8,339	795,413	3,484	12	17,958	39	
Ohio	7,923	12,234	449	-	-	-	204	699	29	
Wisconsin	56,086	234,109	2,077	-	-	-	989	127,120	963	

Source: U.S.D.A. (1962-63) and W.P.A. (1962-63) and U.S.D.A. (1962-63) and U.S.D.A. (1962-63)

*This includes work of Bureau, cooperating State and private agencies, Forest Service and Interior Department, work of regular funds. Total eradication totals are totals on Table 1 Sheet 1.

SUMMARY OF RINGS REPRODUCTION OF LAND OPERATIONS - 1962

LAND OPERATIONS	REPRODUCTION				TOTAL			
	Average Worked	Number Rings Destroyed	Number B-Sour New-days	Average Worked	Number Rings Destroyed	Number B-Sour New-days	Average Worked	Number Rings Destroyed
Reforestation	4,215	54,327	1,102	9,477	454,115	3,999	11,722	768,975
Q & Q Reforestation	-	-	-	-	-	-	-	-
Other public domain	-	-	-	-	-	-	-	-
National Parks	-	-	-	-	-	-	-	-
Indian Reservations	-	-	-	1,030	160,770	1,002	3,010	1,002
<hr/>								
Private Lands	101,815	1,309,103	7,787	120,904	1,785,510	12,403	227,047	2,008,988
<hr/>								
State Lands	101,815	1,309,103	7,787	120,904	1,785,510	12,403	227,047	2,008,988
<hr/>								
Total and additional labor								

Division Five (P. 2002 1)

SUMMARY OF RINGS REPRODUCTION OF LAND OPERATIONS - 1962

Reforestation is the only one of the four (four) types of land

OMPHO TABLE #3 SHEET #3

SUMMARY OF RIBES ELIMINATION ON INDIAN RESERVATIONS - 1962

INDIAN RESERVATIONS (List separately)	INITIAL WORK				REINVESTIGATION WORK				TOTALS	
	Average Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Average Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Average Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	
Red Lake	-	-	-	22	33,658	59	22	33,658	59	
Winnemuncie	-	-	-	986	127,120	953	986	127,120	953	

1962

and not collected other

ANNEX TABLE IV (Contd.)

SUMMARY OF RURAL EDUCATION OF STATE & PRIVATE LAIDS - 1962

State and Private Laid (Laid by State)	Individual Work			Reproduction Work			Totals		
	Approved Laid	Unapproved Laid	Unapproved Laid	Approved Laid	Unapproved Laid	Unapproved Laid	Unapproved Laid	Unapproved Laid	Unapproved Laid
Alabama	2,016	54,207	106	2,353	59,564	308	4,405	69,673	411
Alaska	6,587	15,207	100	2,070	11,787	100	3,457	27,000	200
Arizona	2,575	66,066	1,102	839	15,205	231	3,304	21,409	4,273
Arkansas	57,402	832,115	6,600	65,985	500,350	7,370	125,337	1,032,149	11,970
California	1,740	100,844	647	6,673	500,400	3,005	3,623	500,037	8,000
Colorado	7,100	12,000	157	664	43	4	8,307	12,933	643
Connecticut	20,275	70,552	725	111,611	157,951	1,321	56,085	230,103	2,077
Total	100,000	1,000,000	1,000	1,000,000	1,000,000	1,000	1,000,000	1,000,000	1,000

With and without State

OMNIBUS TABLE #5 SHEET #5

SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS - 1942

NATIONAL FORESTS (List by Forest or Regions)	Initial Work				Reeradication Work				Totals			
	Acreage Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	Acreage Worked	Number Ribes Destroyed	Average Worked	Number Ribes Destroyed	Number 8-Hour Man-Days	
Ottawa	494	91,399	500	851	41,761	349	1,115	133,160			848	
Manitoba	2,867	18,504	176	210	1,350	16	3,077	19,854			192	
Superior	212	4,557	41	6,616	411,037	3,034	6,828	415,594			3,075	
Chippewa	672	199,767	395	-	-	-	672	199,767			395	
TOTAL	4,245	314,220	1,112	11,677	464,148	3,405	11,677	568,505			3,405	

also see consolidated ribes

ANNUAL REPORT OF THE BUREAU OF AGRICULTURE

REPORT OF THE COMMISSIONER OF AGRICULTURE FOR 1912

State	Cultivated Black Current Production				Barberry Production				Shipping	
	Number of Inspections	Number of Locations	Number of Plants	Number of Days Inspected	Number of Plants Inspected	Number of Plants Inspected	Number of Plants Inspected	Number of Plants Inspected	Number of Plants Inspected	Number of Plants Inspected
Alabama	1	1	1	1	1	1	1	1	1	1
Arizona	2	2	2	2	2	2	2	2	2	2
Arkansas	3	3	3	3	3	3	3	3	3	3
California	4	4	4	4	4	4	4	4	4	4
Columbia	5	5	5	5	5	5	5	5	5	5
Delaware	6	6	6	6	6	6	6	6	6	6
District of Columbia	7	7	7	7	7	7	7	7	7	7
Florida	8	8	8	8	8	8	8	8	8	8
Georgia	9	9	9	9	9	9	9	9	9	9
Idaho	10	10	10	10	10	10	10	10	10	10
Illinois	11	11	11	11	11	11	11	11	11	11
Indiana	12	12	12	12	12	12	12	12	12	12
Iowa	13	13	13	13	13	13	13	13	13	13
Kansas	14	14	14	14	14	14	14	14	14	14
Kentucky	15	15	15	15	15	15	15	15	15	15
Louisiana	16	16	16	16	16	16	16	16	16	16
Maine	17	17	17	17	17	17	17	17	17	17
Maryland	18	18	18	18	18	18	18	18	18	18
Massachusetts	19	19	19	19	19	19	19	19	19	19
Michigan	20	20	20	20	20	20	20	20	20	20
Minnesota	21	21	21	21	21	21	21	21	21	21
Mississippi	22	22	22	22	22	22	22	22	22	22
Missouri	23	23	23	23	23	23	23	23	23	23
Montana	24	24	24	24	24	24	24	24	24	24
Nebraska	25	25	25	25	25	25	25	25	25	25
Nevada	26	26	26	26	26	26	26	26	26	26
New Hampshire	27	27	27	27	27	27	27	27	27	27
New Jersey	28	28	28	28	28	28	28	28	28	28
New Mexico	29	29	29	29	29	29	29	29	29	29
New York	30	30	30	30	30	30	30	30	30	30
North Carolina	31	31	31	31	31	31	31	31	31	31
North Dakota	32	32	32	32	32	32	32	32	32	32
Ohio	33	33	33	33	33	33	33	33	33	33
Oklahoma	34	34	34	34	34	34	34	34	34	34
Oregon	35	35	35	35	35	35	35	35	35	35
Pennsylvania	36	36	36	36	36	36	36	36	36	36
Rhode Island	37	37	37	37	37	37	37	37	37	37
South Carolina	38	38	38	38	38	38	38	38	38	38
South Dakota	39	39	39	39	39	39	39	39	39	39
Tennessee	40	40	40	40	40	40	40	40	40	40
Texas	41	41	41	41	41	41	41	41	41	41
Vermont	42	42	42	42	42	42	42	42	42	42
Virginia	43	43	43	43	43	43	43	43	43	43
Washington	44	44	44	44	44	44	44	44	44	44
West Virginia	45	45	45	45	45	45	45	45	45	45
Wisconsin	46	46	46	46	46	46	46	46	46	46
Wyoming	47	47	47	47	47	47	47	47	47	47

(a) Compared to Inspectors and Agents' Statistics.

OUTREACH TABLE #4, SHEET #2

SUMMARY OF ALL OTHER CONTROL WORK FOR 1942

Treatment of Infected White Pines										Checkings			
State	Total Number Pines Examined	Number Infected Pines Cut Down	Infected Pines from Which Cank- ers Removed	No. Cankers Removed		Number 5-Hour Man- Days	Advance		Post		Total		
				Branch	Stem		Average Checked	5-Hour Man-Days	Average Checked	5-Hour Man-Days	Average Checked	5-Hour Man-Days	
Illinois	-	-	-	-	-	-	-	-	1,229	4	1,742	-	
Indiana	-	-	-	-	-	-	196	(a)	-	-	-	4,447 (a)	
Iowa	-	-	-	-	-	-	-	-	-	-	-	-	
Michigan	217,180	223	11,954	33,000	233	1,229	-	-	65,537	110	127,539	(a)	
Minnesota	3,500	16	554	7,160	20	115	-	-	-	-	11,819	(a)	
Ohio	-	-	-	-	-	-	6,853	(a)	-	-	3,891	(a)	
Wisconsin	-	-	-	-	-	-	-	-	32,657	101	30,056	(a)	
TOTAL	220,680	439	12,508	40,160	253	1,344	7,149	-	132,773	211	179,872	317	

A - Pines checked in White Pine Production Code - C

SUMMARY OF EXPENDITURES FOR 1942 INCLUDING MINISTRY OFFICE (51) FORTNIGHT TO STATES

State	Federal (All agencies including State SPA Projects)	State (Including all Coop. Funds)	Total					Reconciliation of Federal Funds			
			Grand Total	Bureau Entomology & Plant Quarantine		Less Ant (3103)	Parent Service (3104)	Regular Funds		Emergency Funds	
				Leadership & Coord. (3101)	Lea. Ant (3103)			Total Regular Funds	State W.F.A.	C.C.C. Funds	C.C.C. Funds
Illinois	\$ 3,705.79	95,328.86	99,034.65	\$2,136.63	\$1,563.11	-	-	\$3,705.79	-	-	-
Indiana	974.54	1,470.50	2,445.04	602.52	372.02	-	-	974.54	-	-	-
Iowa	15,675.15	2,982.30	18,657.45	2,124.23	2,718.65	-	-	1,842.33	\$10,832.27	-	\$10,832.27
Kentucky	21,217.15	14,848.59	109,095.75	14,353.55	5,409.01	-	-	19,732.66	74,144.50	-	74,144.50
Minnesota	63,661.57	7,919.49	71,781.06	14,061.21	2,145.65	\$16,155.10	-	32,962.95	30,709.11	\$ 189.50	30,898.61
Ohio	7,730.03	3,926.50	11,706.53	5,932.58	1,719.99	-	-	7,712.57	31,145.00	36.00	67,165.00
Wisconsin	22,970.49	16,628.54	48,769.03	16,950.13	7,557.49	-	-	24,507.97	1,016.49	3,544.03	7,562.52
TOTALS	218,304.73	53,174.78	271,479.51	36,254.35	21,732.32	16,155.10	36,439.37	130,035.63	3,783.53	123,808.33	

- (a) Includes \$291.89 of Conscientious Objectors Camp Funds and \$27.55 in Bureau W.F.A. Funds Project 501035.
 (b) Includes \$100.00 of N.Y.A. Funds and \$309.50 in Bureau W.P.A. Funds Project 501035.
 (c) Includes \$32.70 of S.Y.A. Funds less \$1.24 cancellation of Bureau W.P.A. Funds Project 501035.
 (d) Includes \$226.40 of S.Y.A. Funds and \$55.64 of Bureau W.P.A. Funds Project 501035.

SUPPLEMENTARY TABLE #5 SHEET #2

SUMMARY OF ALLOCATIONS FOR 1962 INCLUDING MINORANCE OFFICE COSTS PROVIDED TO STATES

Financial Projects									
State	BLM-1 - Leadership, Coordination and Technical Direction				BLM-3 - Cooperative BLM-4 Forest Land Control on State and Privately-Owned Lands				BLM-7 Land Reform Initiative
	Federal Aid States	Federal		Total	Direct States	Federal		Total	
		Regular	Emergency			Regular	Emergency		
Illinois	\$ 3,757,257	\$ 2,135,446		\$ 5,894,252	\$ 1,571,299	\$ 1,569,111	\$ 3,140,410		
Kentucky	413,000	602,522		1,015,522	1,057,500	572,002	1,629,502		
Texas	1,307,500	1,950,222	\$6,979,000	10,235,800	1,674,800	2,892,666	8,400,465		
Washington	5,477,463	15,248,453	51,363,577	90,090,483	9,371,116	6,514,900	55,461,553	\$3,533,609	
Wisconsin	6,925,622	14,067,201	10,167,775	29,154,598	2,953,807	2,446,665	17,817,777	\$2,509,221	
Ohio	2,645,000	5,992,456	51,465	8,669,011	1,881,500	1,719,299	3,607,409		
Mississippi	6,680,000	16,950,428	1,151,400	28,781,828	8,018,254	7,957,469	18,413,122	\$3,501,200	
TOTAL	27,200,472	66,910,280	69,663,280	137,800,430	25,908,666	29,078,462	107,700,440	\$11,046,040	

+ Including all local cooperative funds

Total allocations on specific items shown below Table 5 Sheet 2

CONTINUED TABLE #2A, PART #1

SUMMARY OF ALL RATS KILLED FROM 1918-1942 (CONTINUED)

State (a)	Initial Predication Work			Superadication Work			Number P-Door Man-days (d)
	Gross Average Reported Initially Worked (b)	Gross Average Worked in Control Area (c)	Wild and Cultivated Killed (d)	Gross Average Reported Re-worked (e)	Net Average Re-worked in Control Area (f)	Wild and Cultivated Killed (g)	
Illinois	15,153	10,734	1,607,977	4,485	9,626	684,468	2,834
Indiana	72,892	72,406	373,927	3,654	10,886	714,479	1,463
Iowa	35,471 (a)	34,471	3,205,117	24,217	2,972 (b)	241,249	2,053
Kentucky	1,215,454	1,108,893	64,086,088	271,708	267,444	6,354,723	43,666
Missouri	597,854	374,587	55,510,756	117,254	103,363	6,772,234	32,712
Ohio	188,296	181,117	2,734,929	35,028	33,876	557,249	10,176
Wisconsin	907,975	994,210	24,352,350	344,569	236,272	5,824,905	43,440
TOTAL	2,823,094	2,478,484	24,477,162	827,965	541,675	21,109,229	144,123

All data in this table are gross figures except Net Average Worked in Control Areas. This is necessarily based on June 30
 and of separating the Rats and man-days for the net control averages from the gross figures.

(a) This figure arrived at after deducting an estimated 323,022 man-days of cultivated fields previously included.
 (b) This figure arrived at after deducting an estimated 11,182 man-days of cultivated fields previously included.

UNITED STATES FISH COMMISSION

SUMMARY OF U.S. FISH REPRODUCTION 1910-1912 (PRELIMINARY)

State	Seeds Initial & Reported Inventory	Net Increase Initial Remarks	Initial and Destruction		Number 8-10 Mar-days	Fishes		Mar-days	
			Wild and Cultivated	Destroyed Only		Total Initial	Mar- days	Total Initial	Mar- days
Illinois	24,779	26,360	2,832,445	1,160	7,319	96.1	71.1	0.26	0.29
Indiana	81,770	83,232	448,406	508	4,717	5.1	6.9	0.05	0.10
Iowa	39,443	57,443	3,446,366	12,550	25,300	90.3	61.2	0.63	0.59
Michigan	1,422,606	1,334,237	70,980,311	57,250	315,336	58.7	25.8	0.32	0.16
Minnesota	571,217	677,950	55,282,987	16,211	100,001	117.3	65.5	0.37	0.32
Ohio	222,192	215,183	3,282,178	4,576	12,201	24.5	15.4	0.17	0.30
Wisconsin	1,224,247	1,170,182	90,277,291	90,000	128,209	29.4	21.9	0.35	0.23
Total	3,071,444	3,046,150	290,287,447	185,892	662,264	112.2	111.2	0.28	0.28

OMNIBUS TABLE #2A SHEET #1

STATUS OF BLISTER RUST CONTROL, 1918-1942, (INCLUSIVE)

State	Acreage of White Pine in Net Control Area	Acreage of Net Control Area (White Pine & Protection Zones)	Acreage of Net Control Area Initially Worked	Acreage			Percentage Net Control Area Initially Worked	First Nework	Acreage in		
				Net Control Area Neworked	Other Neworked	Net Control Area Still Seeding			Net Control Area Now in Maintenance	Total Protection	Basic
Illinois	3,920	30,713	16,734	8,820	806	29	55	5	13,979	2,387	16,366
Indiana	7,249	129,495	72,106	7,987	2,899	8	56	5	57,087	33,125	90,212
Iowa	5,000	60,000(*)	31,171(*)	2,972(*)	-	5	57	10	25,529(*)	17,556(*)	43,085
Michigan	146,434	1,118,803	1,118,803	204,266	23,178	10	83	15	225,924	297,644	523,568
Minnesota	285,880	651,418	374,587	96,102	6,961	15	58	6	276,831	64,390	341,221
Ohio	53,771	409,732	101,447	24,992	8,884	6	44	16	228,585	52,604	281,189
Wisconsin	350,819	1,486,601	94,210	231,196	5,076	63	63	16	592,391	81,172	673,563
TOTAL	1,174,987	6,118,204	2,775,965	1,042,725	17,846	66	66	18	2,470,000	641,702	3,111,702

Reference - Any area on which the blazes are so sparse that danger from blister rust is negligible for an indefinite period. To secure the continuation of this safe condition requires periodic examinations and in some instances blazes eradication by spraying methods.

(*) These figures have been adjusted according to the acreage of cultivated fields dropped from the records. Cultivated fields are no longer considered in the control area.

OMNIBUS TABLE #34 SHEET #1

SUMMARY OF ALL RIBES BRADICATION BY PROGRAMS 1918-1942 (EXCLUSIVE) (Initial and Recertification)

Station	Regular and Cooperatives			W.P.A. AND S.R.A.		
	Acres Worked	WPA and Ribes Destroyed	Number 8-800 Sub-Days	Acres Worked	WPA and Ribes Destroyed	Number 8-800 Sub-Days
Alameda	7,850	387,712	910	13,108	1,530,695	4,101
Butte	24,142	28,380	275	60,090	704,957	2,659
Coos	3,176	39,607	1,125	23,970	1,012,069	20,135
McClurg	133,017	3,178,035	14,262	770,801	62,445,225	172,750
Montezuma	16,935	1,008,776	6,527	299,590	38,012,993	97,104
Obata	19,505	17,796	520	155,111	1,169,150	26,351
Shasta	151,480	5,633,115	18,670	602,701	65,423,730	195,250
TOTAL	394,175	10,202,861	42,291	1,995,173	132,077,595	546,725

which included work of the Bureau, cooperating state and private agencies, Forest Service and Interior Department work with regular funds. This table consolidated the totals in table #12, 1918-42.

UNITED STATES FISH AND WILDLIFE SERVICE

SUMMARY OF ALL FISH REPRODUCTION BY PROGRAMS 1910-1912 (EXCLUSIVE) (Tablet and Radioactive)

State	C.C.C. and B.C.C.		P.W.A. or S.S.A.		Total Emergency Program	
	Acres Worked	Wild and Cultivated Fishes Destroyed	Number 3-Hour Men-days	Acres Worked	Wild and Cultivated Fishes Destroyed	Number 3-Hour Men-days
Illinois	2,631	372,038	1,915	810	1,902,733	6,109
Indiana	16,832	109,015	1,514	2,713	1,300,025	4,122
Iowa	1,127	350,215	3,915	6,879	5,406,579	25,173
Michigan	575,906	23,014,123	127,391	1,072	67,802,776	301,054
Minnesota	112,279	20,989,156	65,320	12,355	61,271,211	173,171
Ohio	10,344	673,118	13,810	11,132	5,271,022	13,721
Wisconsin	107,055	13,128,709	174,235	4,602	24,604,179	369,532

TOTAL	1,255,105	13,128,709	1,014,724	75,006	1,014,724	1,014,724
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SUMMARY OF MINES RECLAMATION BY LAND OWNERSHIP 1918-1942 (INCLUSIVE)

Land Ownership (a)	NET CONTROL AREA			INITIAL RECLAMATION				Other Land Reclaimed (g)
	Average of White Pine in Set Control Area (b)	Total Acreage (W. P. + Prof. (c))	Average not yet worked (d)	Gross Acreage Reported Initially Worked (e)	Net Average Worked in Control Area (f)	Gross Number Wild and Cultivated Ridges Destroyed (g)		
National Forests	197,275	427,666	168,588	269,993	259,078	18,998,893		92,030
O & C Revested lands								
Other Public lands	299	2,248	901	1,547	1,347	23,156		221
National Parks	425	2,835	70	2,540	2,205	113,278		827
Indian Reservations	49,676	95,426	19,843	79,175	76,573	27,328,469		70,403
	xx 247,190	526,330	189,332	350,515	336,998	46,350,518		162,644
State and Private	925,137	3,585,954	1,190,594	2,562,580	2,395,360	168,520,644		665,301
		4,457,119	1,289,926	3,913,100	2,732,358	273,207,306		828,144
TOTAL	1,422,128	8,545,706	3,079,776	7,825,210	7,424,929	515,377,115		1,415,818

Column 1 & column 2 equals column 3. The total of column 2 of this table should agree with the total of column 2 of Table II, Sheet #1.

xx Charges due to transferring all work done on Federal Reclamation areas to Nat. Park Service to State & Private.

OMNIBUS TABLE #1A SHEET #2

SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIP - 1918-1942 (INCLUSIVE)

Land Ownership	Eradication Work					Totals (Initial & Re-work)			
	Gross Acreage Reported Reworked	Net Acreage Re-worked in Control Area	Gross Number Wild and Cultivated Ribes Destroyed	Gross Number B-Hour Man-Days	Gross Initial and Re-worked Acreage Reported	Net Acreage Initial and Re-work	Gross Number Wild and Cultivated Ribes Destroyed	Gross Number B-Hour Man-Days	
National forests	53,195	59,195	1,819,108	13,757	323,100	312,213	20,008,301	105,791	
O & A Reported lands	-	-	-	-	-	-	-	-	
Other public domain	-	-	-	-	2,367	4,347	23,156	307	
National Parks	x 2,776	1,670	30,549	554	1,444	1,444	100,117	1,117	
Indian Reservations	39,497	35,697	3,753,001	29,896	118,872	116,270	33,081,470	90,095	
Subtotal (Forests)	<u>92,832</u>	<u>92,832</u>	<u>5,602,409</u>	<u>83,313</u>	<u>443,387</u>	<u>428,830</u>	<u>51,962,927</u>	<u>196,037</u>	
States and Private	<u>571,607</u>	<u>571,607</u>	<u>15,506,916</u>	<u>102,261</u>	<u>313,418</u>	<u>296,646</u>	<u>14,827,560</u>	<u>76,829</u>	

5/10/42

6/11/42

21,104,305

1,061,121

5,496,797

7,007,407

* See Note (x) on Table # A Sheet 1

number of fibres subjected to vertical loads 1953-1962 (1962-1963)

CONTIGUE TABLE #1A SHEET #4

SUMMARY OF RIBES REPRODUCTION ON NATIONAL PARKS (1961-1962) (CONTINUED)

National Parks (List separately)	Reproduction Work				Totals Initial and Remark			
	Gross Losses Reported Re-marked	Net Losses Re-marked In Control Area	Gross Number Wild and Unmarked Ribes Destroyed	Gross Budget D-Box Mon-Days	Gross Initial and Re-marked Losses Reported	Net Losses Initial and Remark	Gross Number Wild and Unmarked Ribes Destroyed	Gross Number Ribes Survived
Yosemite National Park	1,674	1,674	30,634	667	3,000	0,185	124,105	2,100
El Yunque National Forest	-	-	-	-	251	251	19,702	0
TOTAL: NET, LOSS	1,674	1,674	30,634	667	3,251	436	143,807	2,100

OMNIBUS TABLE #4A SHEET #6

SUMMARY OF RICE ERADICATION ON INDIAN RESERVATIONS 1918-1942 (INCLUSIVE)

Indian Reservations (List Separately)	ERADICATION WORK					TOTALS		
	Gross Acreage Reported Resowed	Net Acreage Resowed in Control Area	Gross Number Wild and Cultivated Rices Destroyed	Gross Number 8-Hour Man-Days	Gross Initial & Resowed Acreage Reported	Net Acreage Initial and Resowed	Gross Number Wild and Cultivated Rices Destroyed	Gross Number 8-Hour Man-Days
Sac Fox	-	-	-	-	206	206	2,980	58
Grand Portage	-	-	-	-	537	432	739,562	1,074
Vermillion	206	206	29,912	210	492	412	167,442	630
Fort Lake	17	17	7,856	22	6,954	6,641	524,052	1,507
Deer Lake	16,360	16,360	1,718,929	7,247	36,112	35,922	8,347,970	18,020
White Earth	377	377	45,226	257	1,731	1,540	443,932	1,493
Red River	4,020	4,020	385,560	1,750	11,899	11,567	7,724,029	17,700
Levee Court Oreilles	2,652	2,652	129,239	814	10,613	10,561	1,137,943	7,997
Levee du Flambeau	5,505	5,505	19,614	189	11,812	11,812	566,352	2,707
Neenah	30,485	30,485	1,416,665	9,117	38,402	37,177	11,427,170	58,807
TOTAL	77,977	77,977	3,779,004	19,536	118,490	116,276	34,811,370	80,127

SUMMARY OF RIBES RADICATION ON STATE AND PRIVATE LANDS 1918-1942 (TWO-SHEET)

State and Federal Lands (List by State)	Average of White Pine in Net Control Area	Net Control Area			Cultivated Grazing Area			Gross Number Wild and Cultivated Ribes Destroyed	Gross Number Barbour Members
		Total Acres (W.P. & Prot. Zones)	Average Not Yet Worked Initially	Gross Acres Reported Initially Worked	Net Acres Worked in Control Area				
Alaska		3,524	23,979	15,253	16,734		1,607,977	4,685	
Indiana		7,239	56,939	72,892	72,405		373,927	1,651	
Iowa		4,000	25,529	35,365	34,205		3,232,337	24,169	
Massachusetts	XX	<u>394,815</u>	<u>211,789</u>	<u>1,080,904</u>	<u>99,837</u>		<u>58,598,397</u>	<u>243,727</u>	
Minnesota	XX	<u>179,713</u>	<u>126,136</u>	<u>300,044</u>	<u>280,101</u>		<u>41,396,364</u>	<u>97,971</u>	
Ohio		33,316	227,832	185,251	170,002		2,712,777	51,809	
Washington		331,913	326,108	673,171	122,025		60,836,125	259,165	
TOTAL	XX	<u>925,137</u>	<u>1,190,594</u>	<u>2,562,510</u>	<u>243,953,360</u>		<u>168,520,644</u>	<u>665,301</u>	

XX Charges due to transferring all work done on Federal Recreational Areas, National Park Service to State and Private.

OMNIBUS TABLE #1A SHEET #8

SUMMARY OF RHES ERADICATION ON STATE AND PRIVATE LANDS 1918-1942 (INCLUSIVE)

State and Private Lands (List by State)	Reeradication Work					Totals (Initial & Rework)			
	Gross Acreage Reported Reworked	Net Acreage Reworked in Control Area	Gross Number Wild and Cultivated Rhies Destroyed	Gross Number 8-Hour Man-Days	Gross Initial & Reworked Average Reported	Net Acreage Initial and Reworked	Gross Number Wild and Cultivated Rhies Destroyed	Gross Number 8-Hour Man-Days	
Illinois	9,626	9,625	180,468	2,834	24,719	26,350	2,292,445	7,319	
Indiana	10,586	10,886	72,479	1,065	83,776	85,292	448,406	4,717	
Iowa	2,972	2,972	21,249	2,053	38,237	37,237	3,113,386	26,281	
Michigan	* 249,143	249,143	640,367	32,602	133,047	1,240,980	65,002,074	283,329	
Minnesota	1,62,350	62,350	3,934,163	18,265	362,394	342,451	45,332,527	116,236	
Ohio	33,876	33,876	557,249	10,176	219,027	211,878	3,268,966	14,384	
Wisconsin	202,731	202,731	3,611,631	26,739	1,075,925	1,024,769	64,239,756	385,476	
TOTAL	571,607	571,607	15,506,916	102,728	3,134,167	2,966,967	184,027,560	768,029	

* Charges due to transferring all work done on Federal Recreational Areas, National Park Service, to State and Private,

SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS 1970-1962 (INDICATIVE)

National Forests (List by Forests or Regions)	Net Control Area		Initial Eradication Work				
	Acreage of White Pine in Net Control Area b	Total Acreage* (W.P. & Prob. Zones) c	Acreage not yet Worked Initially d	Acreage Reported Initially Worked e	Net Acreage Worked in Control Area f	Gross Number Wild and Cultivated Ribes Destroyed g	Gross Number 9-Hour Man-Days h
Alaska	19,968	51,400	-	52,302	61,400	144,733	2,325
Arizona	1,214	5,052	-	4,036	5,052	64,475	503
California	10,691	25,299	4,250	22,072	21,049	830,386	7,099
Colorado	6,857	20,872	3,295	19,905	27,577	621,089	4,603
Idaho	13,509	29,119	5,230	24,055	21,889	3,827,008	14,401
Montana	91,720	154,991	122,432	35,192	32,599	5,309,087	20,226
Nebraska	24,724	58,302	24,362	33,866	34,940	3,382,272	14,110
Oregon	159	1,738	-	1,738	1,736	56	18
Washington	16,529	40,265	3,621	37,754	37,646	2,615,833	16,223
Wyoming	12,085	30,969	4,390	27,033	25,171	2,203,954	13,441

* Includes 1,000 acres of riparian forest in the riparian zone.

OMNIBUS TABLE #1A SHEET #10

SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS 1918-1942 (INCLUSIVE)

National Forests (List by Pursebe or Regions)	Reeradication Work				Totals (Initial & Rework)			
	Gross Acreage Reported Reworked	Net Acreage Reworked in Control Area	Gross Number Wild and Cultivated Ribes Destroyed	Gross Timber 2-Hour Re-work Days	Gross		Gross Number Wild and Cultivated Ribes Destroyed Man Days	
					Initial and Reworked Acreage Reported	Net Acreage Initial and Rework		
Marquette	7,373	7,373	6,104	83	69,675	68,773	150,837	
Marquette	766	766	23,455	134	5,602	5,818	87,930	
Marquette	1,170	1,170	26,070	717	23,802	22,219	856,456	
Marquette	3,294	3,294	43,789	486	23,199	20,871	664,878	
Marquette	5,698	5,698	391,638	2,506	50,593	27,536	40,208,636	
Superior	15,859	15,859	882,756	5,556	50,052	48,416	6,171,843	
Superior	8,194	8,194	173,309	1,290	42,860	42,134	3,555,662	
Superior	-	-	-	-	1,798	1,798	36	
Superior	7,138	7,138	197,130	1,736	44,692	44,782	2,812,983	
Superior	3,843	3,843	125,087	1,269	30,676	29,814	2,388,041	
TOTAL	98,135	98,135	1,807,108	11,780	231,122	162,243	2,812,983	

OMIIBOS TABLE 45A SHEET 42

SUMMARY OF ALL OTHER CONTROL WORK, 1918-1942 (INCLUSIVE)

State	Mapping Control Areas		Treatment of Infected White Pines						Number Saw-Log Man-Days
	Number Acres Mapped (White Pine and Protection Zones)	Number Saw-Log Man-Days	Total Number Pines Examined	Number Infected Pines			Number Cankers Removed		
				Cut Down	Which Cankers Removed	Branch	Stems		
Illinois	23,913	239	-	-	-	-	-	-	-
Indiana	112,033	294	-	-	-	-	-	-	-
Iowa	42,465	5,253	-	-	-	-	-	-	-
Michigan	1,735,524	17,517	703,045	291	38,117	94,000	327	3,063	-
Minnesota	741,544	34,034	222,692	1,171	8,744	27,499	240	1,011	-
Ohio	312,109	3,369	300	13	7	11	5	-	-
Wisconsin	1,352,287	20,916	-	-	-	-	-	-	-
TOTAL	4,425,872	41,556	925,997	1,479	46,861	121,500	572	4,071	-

SUMMARY OF ALL EXPENDITURES, 1918-1942 (INCLUDING MILWAUKEE OFFICE COSTS PRESENTED TO STATES)

State	Federal (All Agencies Including State WPA Projects)	Accumulation of Regular Funds				
		State		Grand Total (State and Federal Funds)	R.P.I. and B.S.P.Q.	Dept. of Interior Indian Lands
		Indirect Aid (Various Evid.)	(Including All Coop. Funds) Direct Aid			
Illinois	\$38,323.70	\$17,745.89	\$2,735.43	\$90,305.12	\$6,352.85	-
Indiana	23,527.27	2,775.10	1,143.22	27,443.55	2,600.91	-
Iowa	202,262.44 ^a	17,296.50 ^b	10,070.30 ^b	229,629.24 ^{a,b}	28,594.38	-
Michigan	1,425,533.35	108,505.04	101,353.35	1,635,391.74	150,323.70 ^c	-
Minnesota	1,155,595.46	88,054.42	25,015.50	1,269,665.38	167,414.07	-
Ohio	365,281.76 ^d	15,011.09 ^d	22,695.30 ^d	406,988.15	37,704.70	-
Wisconsin	1,661,421.70	69,890.03	107,333.60	1,838,645.33	152,126.63	\$1,573.30
TOTALS	4,975,345.68	323,275.07	270,950.15	5,669,771.41	327,127.25	1,573.30

(a) Excludes \$189.39 Milwaukee WPA Administrative erroneously reported in 1941 Cumulative Omnibus Tables.

(b) Includes \$1,266.30 State contributions erroneously omitted from 1941 Cumulative Omnibus Tables.

(c) Decreased by \$7.00 of SCS-CCC funds erroneously charged to Regular in 1936 Omnibus Tables.

(d) Corrected by removing State contributions and increasing Federal funds by \$702.12 of SNA costs erroneously reported under State in 1935.

SUPPLEMENTARY OMNIBUS TABLE #6A SHEET #2

SUMMARY OF ALL EXPENDITURES, 1918-1942 (Inclusive)
INCLUDING MILWAUKEE OFFICE COSTS PRORATED TO STATES

RECAPITULATION OF EMERGENCY FUNDS

State	F E D E R A L W. P. A.				C. C. C.		Total
	Bureau	Forest Service	Department Interior	Total	State WPA (All Bureau)	Forest Service & State Camps	
Illinois	\$22,920.30	-	-	\$22,920.30	-	-	\$3,962.86
Indiana	15,473.62	-	-	15,473.62	-	\$3,612.95	3,612.95
Iowa	127,901.67	-	-	127,901.67	\$12,828.57	13,551.28	15,108.66
Michigan	769,231.63	\$7,747.62	\$1,832.99	778,812.24	83,138.35	292,733.73	301,701.62
Minnesota	631,677.41	1,518.84	-	633,196.25	48,449.77	126,442.27	211,375.26
Ohio	109,430.99	-	-	109,430.99	160,033.62	33,819.51	33,819.51
Wisconsin	779,095.52	8,797.45	-	787,892.97	7,737.61	379,820.20	567,019.62
T O T A L	2,155,134.14	10,063.91	1,832.99	2,175,625.04	312,197.82	612,979.94	1,135,601.36

RECAPITULATION OF EMERGENCY FUNDS (Continued)

State	P. W. A.				Grand Total
	Bureau	Forest Service	Total	CWA, ARA, NRA, C. O. Camps	
Illinois	\$2,306.32	-	\$2,306.32	\$771.33	\$29,960.81
Indiana	1,839.79	-	1,839.79	-	20,926.36
Iowa	12,971.11	-	12,971.11	4,858.23	173,668.06
Michigan	72,161.63	\$1,184.10	73,345.73	33,714.86	1,270,715.60
Minnesota	67,900.24	6,181.97	74,082.21	2,280.34	969,385.83
Ohio	19,199.09	-	19,199.09	5,093.85	327,577.06
Wisconsin	57,198.12	1,036.16	58,234.28	72,952.77	1,493,837.75
T O T A L	233,576.60	8,220.23	241,796.83	119,871.30	1,286,069.47

